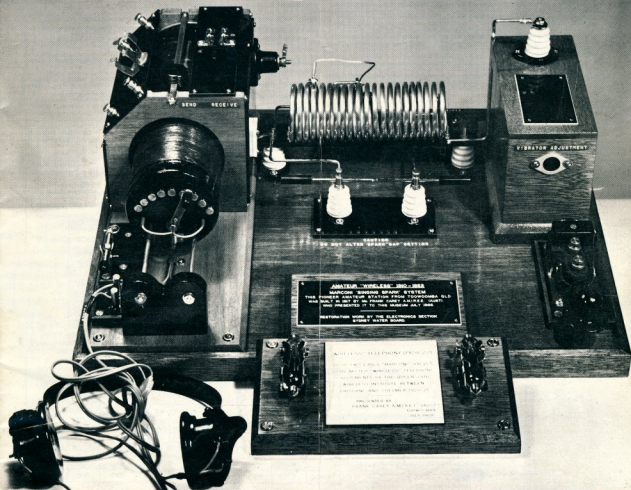


amateur radio

SEPTEMBER, 1973



• IMPROVING LOUDSPEAKER
REPRODUCTION FOR SSB

• MOBILE LINEAR FOR FT75

• HOLIDAY TIME

• MODIFICATIONS TO MR6A

• BARLOW WADLEY XCR-30

• A SAGA OF THE BUG

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

C.G.S

TYPE C MINIATURE VITREOUS ENAMELLED POWER WIREWOUND RESISTORS

Approved to BS 9114 - N002 style 2E-56

SPECIFICATIONS

The 'C' Series of miniature wirewound, vitreous enamelled resistors has been designed to meet the requirements of Specification BS 9114 - N002, and full Qualification Approval has been granted. A Test Report Summary is available on request; this report shows that many of the performance levels are in fact much higher than the specification acceptance levels.

The use of specially selected materials, combined with the application of exacting quality control throughout all stages of production ensures the consistent achievement of a very high standard of reliability.

ELECTRICAL SPECIFICATION

Tolerance: $\pm 5\%$ is standard on values of 1Ω and above and $\pm 10\%$ between 0.1Ω and 1.0Ω . For non standard values and tolerances please consult the factory.

Resistance values: C Series resistors are available with the preferred ohmic values of the E24 Series within the ranges shown in Table 1.

Temperature coefficient: Typically less than 100 ppm/ $^{\circ}\text{C}$ and never exceeding 200 ppm/ $^{\circ}\text{C}$ over the category temperature range -55°C to $+200^{\circ}\text{C}$

MATERIALS

Core: High purity steatite ceramic. Chemically inert, capable of withstanding severe thermal shock and impervious to moisture. Ground to close tolerance finish to give maximum contact with wire element for rapid heat transfer.

Resistance Element: High quality nickel-chrome or nickel-copper alloy depending on resistance value; wound at minimum tension.

End Caps: Formed to close tolerances from a special nickel-iron alloy chosen for its consistent welding properties and glass sealing characteristics.

Leads: Solder coated nickel A.

Uncoated leads can be supplied for welding.

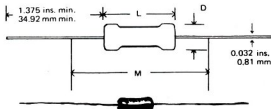
Specify - 'weldable leads'.

Preformed and cropped leads can also be supplied on request.

Coating: Humidity proof vitreous enamel with carefully controlled expansion matched to the materials of the resistor.

TABLE 1

| C.G.S. | | | BS 9114 - N002 | | | | | | | STYLE CROSS REFERENCE | | | |
|--------|-------------------------------|--------------------|----------------|----------------------|-------------------------------|-----------------------------|------|-----------------------|---------------------------------|-----------------------|-------------------|------------------|--------------|
| Style | Maximum wattage rating @ 20°C | Resistance Range Ω | | BS 9114 - N002 Style | Maximum wattage rating @ 70°C | Approved Resistance Range Ω | | Critical Resistance Ω | Limiting Element Voltage, Volts | | DEF. 5111-1 Style | DEF 5115-2 Style | G.P.O. Style |
| | | min. | max. | | | min. | max. | | Normal | Low Air Pressure | | | |
| C3A | 3 | 0.1 | 10K | 2E-56-2.5 | 2.5 | 1 | 4.7K | 3.9K | 100 | 70 | RWV3J | RFH3-2.5 | P.O.35 |
| C7 | 7 | 0.1 | 27K | 2E-56-6 | 6 | 1 | 15K | 6.8K | 200 | 140 | RWV4J | RFH3-6 | P.O.40 |
| C10 | 10 | 0.1 | 68K | 2E-56-9 | 9 | 1 | 68K | 27K | 500 | 350 | RWV4K | RFH3-9 | P.O.36 |
| C14 | 14 | 0.2 | 120K | 2E-56-12 | 12 | 1 | 100K | 47K | 750 | 530 | RWV4L | RFH3-12 | — |



Note: M = resistance measuring points distance - below 10Ω only.

TABLE 2

| Style | Length L | | Diam. D | | Measuring Distance M | | Approx. Weight |
|-------|----------|----------|----------|----------|----------------------|----------------|----------------|
| | max. in. | max. mm. | max. in. | max. mm. | ± 0.062 in. | ± 1.59 mm. | |
| C3A | .499 | 12.7 | 0.220 | 5.6 | 1.250 | 31.8 | 1.0 |
| C7 | .874 | 22.2 | 0.315 | 8.0 | 1.625 | 41.3 | 2.0 |
| C10 | 1.499 | 38.1 | 0.315 | 8.0 | 2.250 | 57.2 | 3.5 |
| C14 | 2.106 | 53.5 | 0.315 | 8.0 | 2.875 | 73.0 | 5.0 |

amateur radio

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FRONT COVER:

A typical example of the fine engineering of an early transmitter built by VK2AMI in 1920 and presented to the Queensland Museum.
Photo supplied by G. M. Hull, VK3ZS

QSP

What's in it for me?

A familiar Australian expression—one which is often heard in reference to our Institute.

What is there in the WIA for you and me?—two members of the oldest organisation of its kind in the entire world of Amateur Radio!

Chances are that I don't know you and you don't know me yet, but my sincere hope is that, through QSP, we'll get to know each other pretty well.

Although we've never met, there are, when you think about it, many things we do know about each other.

First and foremost, we're both interested in Amateur radio as a hobby or pastime; probably for vastly different reasons, but are bound by the common interest of Amateurs the world around—the desire to communicate—That we know.

Whether you are a DX man, or VHFer, a ragchewer, a newcomer, an antenna experimenter or whatever, there is always something I can learn from you.

Some new wrinkle or some benefit from your experience in communicating is readily available and willingly given—should you be asked—I know, because that's the nature of our "game" and in 28 years of amateur radio I've never been disappointed.

We're both members of the WIA, otherwise you probably wouldn't be reading this Magazine!

Now, what's in the WIA for you and me?

That's something I'm working on—the job of letting you know what's in it for us—not just you and me but the *us* represented by our entire membership and the *us* who are amateurs but do not belong to the WIA.

The Executive of the Institute has given me the task of keeping you informed about the things which the Institute does in your name—representing the Amateur Service—and about which you have a right and a need to know.

The Executive feels that, for too long, there has been a communication gap between them and you, the member.

So, every month some topic or topics will be the subject of this page to keep you in touch with Institute affairs.

Meeting each month, Executive handles all sorts of problems which are of great importance to us all in maintaining the privileges of the Amateur Service.

For example, during the two most recent Executive Meetings, considerable complex discussions took place concerning:—negotiations with the Australian Post Office on frequency allocations; the matter of reciprocal licensing arrangements with other Administrations; the formation of the VK1 Division; use of the 11 metre band, and the planned Extraordinary Convention on Repeaters.

You will hear more of these in future editions—particularly the Extraordinary Convention scheduled for September 15, which will be fully reported next month.

Executive has re-arranged its calendar, thus allowing their deliberations and actions to be available to AR within days of the meeting.

Therefore, what you see in QSP in future should be an accurate and up-to-date statement of activities at the Federal level.

Believe me, there is a GREAT DEAL in the WIA for both of us, no matter what our particular interest in radio may be.

JOHN McL. BENNETT, VK3ZA

A.R. AWARDS

The Publications Committee now have three awards available for contributions to A.R. There are the existing Higginbotham Award, and Technical Award; and to these has been added the Al Shawsmith Journalistic Award (ASJA) which carries with it a handsome plaque and a monetary token.

ASJA takes into account clarity of expression, conciseness, logicity, grammar and spelling, full and sufficient treatment of the subject matter, as well as originality and readability adjudged likely to be the best to enhance the image of amateur radio as an activity and to promote interest in it.

Although preference would normally be given to articles of a technical nature this does not exclude other articles, especially humorous articles, on a subject of amateur radio interest. Copies of articles in other publications would of course be excluded.

The Committee would like to thank Al Shawsmith, VK4SS, for his kindness and interest in putting forward the various suggestions which led up to the creation of this award.

TRANSCEIVERS — IMPORT DUTIES

Continuing the AR Special article in the July issue, Customs By-Law determinations have now been seen, or are known to have been issued, for Yaesu transceivers Models FT101, FT200, FTDX401 and FT501. Applications have been rejected however for any separate power supply unit for models without built-in supplies. One amateur received his approval only five days after sending in his application. Another amateur plans to buy his transceiver in Singapore but because of double freights, exchanges and profit (quite apart from whether or not any such amateur equipment might be available "off the shelf" in Singapore) he might find it just as reasonable to try the Australian import market first.

STOP PRESS AX Prefix

The AX Prefix may be used by
all VK amateurs (except TPNG)
from 1-10-73 to 31-12-73, to mark
HM Queens Visit
PMG letter RB 4-8-1 of 23 Aug 73

11 METRE BAND

The amateur allocation on the 27MHz band is 26960-27230 kHz — i.e. 270 kHz. This allocation applies for amateur use in Australia, New Zealand and Region 2, but of course in the last-mentioned it is given over in part to the U.S.A. to the Citizens Band. It is thus easy to note why commercially manufactured amateur equipment seldom includes this band allocation. However, the band is designated for industrial, scientific and medical purposes. Other users must therefore accept any harmful interference from ISM. Radio Control (model aircraft etc.) occupies the band 26950 to 27282 kHz — i.e. 325 kHz, 27120 kHz ISM. 27240 and 27270 kHz for portable hand-held equipment and 26978 and 27212 kHz for radio paging systems. All these are part of the general allocation for Fixed and Mobile, except aeronautical mobile, extending from 26100 to 27500 kHz.

REPEATER IN U.K.

The first repeater in G-land was commissioned on September 14, 1972 with the callign GB3PI operating with a max. dc input of 150w transmitting on 145.75MHz receiving on 145.15MHz and licensed for one year experimental use. A progress report in Radio Communication for June 1973 asks "where do we go after the GB3PI experiment? Do we apply for licences for one or two more repeaters in other areas? Do we try a vhf repeater? Do we want repeaters at all?"

improving loudspeaker reproduction for SSB dx

Bruce Mann, VK3BM

9 Connell Street, Swan Hill, 3555

How often have you reported that the other station would be perfectly readable if he was not buried in the static? Perhaps something can be done about it after all, rather than giving up in disgust!

The range of frequencies required for good speech intelligibility is 300 - 2200 Hz but most loudspeakers have a natural cone resonance between 80 Hz and 120 Hz. In fact a very marked resonance. You can test this by holding the speaker near your ear and tapping the cone with a finger — a bass note will be heard.

At this frequency the cone will tend to vibrate freely with any noise pulse — electrical, static, etc.

Instead of a single oscillation, when pulsed it tends to make a number of diminishing excursions.

The two methods employed in Hi-Fi to reduce this effect are (a) to load the voice coil electrically by correct matching to a low impedance circuit — i.e. by choice of driving tubes or transistors and transformer, and use of a speaker with a strong magnet. (b) to load the cone acoustically by use of a baffle or enclosure.

But in voice reproduction we do not need the bass frequencies — in fact they reduce intelligibility by masking the higher frequencies containing the consonants, which are of major importance in clear understandable speech. So why not insert a filter in the speaker leads to remove all frequencies below 300 Hz?

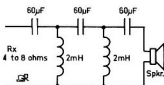
The capacitors should be bi-polar types as ordinary polarised electrolytics do not like a regular diet of A.C!

The junk box R.F. chokes that I used were rather high in D.C. resistance so I found 2 stages an advantage, but probably a choke made for the job (such as the Rola SOL 36, would be sufficient with one stage).

RESULTS

Comparing by switching between the enclosed speaker and a similar speaker on a small flat baffle, there was a noticeable loss of volume with the enclosure but a marked improvement in clarity. Static became more of a sharp crack than a rumble, and similarly with other QRN. But switching in the filter made a further great improvement by removing the unnecessary bass and further loading the voice coil.

In conjunction with a receiver having sharp I.F. filters, adjustable passband tuning, and a good notch filter, it's wonderful what it will pull out of a crowded "static" 40 or 80 metre band.



technical articles for ar

- always in demand — needed now.
- any subject of general interest.
- constructional — theoretical—humorous
- long articles—short articles—medium articles
- hints and kinks.
- preferably typewritten manuscript, but handwritten acceptable.
- double spaced, one inch margins, one side only of quarto or foolscap sheet.
- spelling and grammar entirely optional; editorial staff will polish.
- drawings made by AR staff from sketches submitted.
- good, clear, glossy photos welcomed with open arms. do not forget captions.
- send it now to:—
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Melbourne, 3001.

EXPERIMENTS

In a series of experiments I have come up with a simple filter, and a speaker enclosure which has worked wonders with "duck talk" on a noisy band. The intention was to improve reception for my faulty hearing (which falls off drastically above 1000 Hz) but visitors with normal hearing prefer the gadget switched in.

First I made a box to fit the speaker, using 1/4" Particle Board. In my case, to fit a 6" speaker the box was 8" wide x 6" high x 4 1/2" deep internally. It was lined with sound absorbent material. — Tontine wadding in my case. The front, with a 4" dia. cut-out, was fastened by suitable screws, so that various available speakers could be tried.

Testing speakers without the filter it was observed that there was a marked difference between them. Those with the most powerful magnets seemed best. Just loosening the screws, thus producing a crack in the enclosure, very noticeably altered the tone and reduced the crispness of reproduction.

Then, referring to tables, a 2 stage filter was made to cut off below 300 Hz— see fig. 1.



mobile linear amplifier for the FT75 transceiver — Cyril Walker, G3AZT

Reprinted from Mobile News, January, 1973

The popular QOQ06-40 twin tetrode, beloved of the VHF fraternity, also has very suitable characteristics for use on the HF bands. Although reference is made in this article to some components of U.K. manufacture there should be little difficulty in obtaining equivalent items in Australia.

GENERAL DESCRIPTION

The amplifier with inverter power supply is built into a 9 x 5 x 5 inch "Electrokit" box. Using the FT-75, which was reviewed recently, as a driver, a peak power of 200 watts can be achieved with this linear. A passive grid configuration was found to be the most satisfactory, using a QOV06-40A tube.

The more usual "sweep tube" amplifiers as used in most American and Japanese equipment were rejected on account of their high heater consumption. Although with the amplifier switched on, three tubes are in use — the 12BY7 and 12DQ6B in the FT-75 plus the QOV06-40A — compared with only two in the FT-101, table 1 shows that it is more economical on overall battery drain and has the great advantage that the linear can be switched off when listening. Probably 75% of my time is spent listening.

This set-up has been compared with the FT-101, and measurements of battery drain and field strength using a common antenna indicate slightly better transmitter performance.

| Equipment | Current Consumption — Amperes | | | |
|--------------|-------------------------------|------------|----------------|-------------|
| | Receive | Transmit | | |
| | | No. speech | Average speech | Peak speech |
| FT-150 | 4 | 3.5 | 10 | 13 |
| FT-101 | 5 | 9 | 17 | 22 |
| FT-75 + Amp. | 5 | 11 | 17 | 28 |

Table 1: Comparison of Battery Current Consumption.

POWER SUPPLY

I obtained an inverter supply — ex Pye equipment — from Messrs. Garex Ltd. of Chinnor, Oxfordshire, and this fits conveniently into the back of the "Electrokit" box. Both of the high voltage supplies were changed to voltage doublers by disconnecting two of the rectifiers in each bridge and wiring one of each of them in series with the remaining rectifiers.

Two 16 μ F 450 volt electrolytics are used in the high voltage circuit and two 8 μ F 350 volt ones in the lower voltage, screen supply. A test was made on the higher voltage rail on resistive load and at 14 volts input, 870 volts at 250 mA was obtained.

The screen supply, of the order of 400 volts, is dropped to 300 volts by a feed resistor with two, series connected, 150 volt, zener diodes across the screen to ground. The 25-30 volts grid bias voltage is obtained by removing some of the resistors and replacing them with a potentiometer.

AMPLIFIER CIRCUITRY

The amplifier circuit is conventional but a few practical details are of interest. Band change is effected by a two wafers, two pole, five way ceramic rotary switch, S1. All p.a. antenna loading capacitors are Suffix, polystyrene types rated at 500 volts d.c. working and have so far

proved quite satisfactory. The table 2 gives the p.a. tank circuit parameters for each band. The fixed tuning capacitors must be high voltage mica or ceramic types.

| Band MHz | C1 pF | C2 pF | L1 μ H |
|----------|-------|-------|------------|
| 3.5 | 310 | 1600 | 7.5 |
| 7.05 | 135 | 880 | 4.0 |
| 14.2 | 76 | 450 | 2.1 |
| 21.3 | 52 | 290 | 1.4 |
| 28.6 | 38 | 220 | 1.0 |

Table 2: P.A. Tank Circuit Parameters

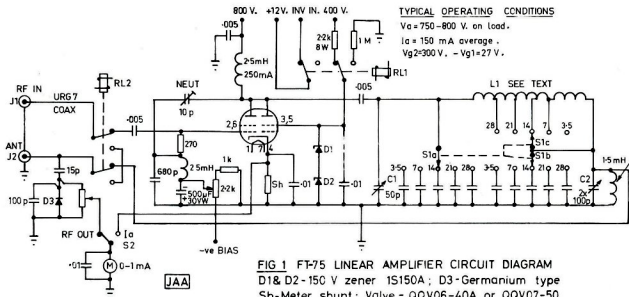
N.B.: Subtract half the capacitance swing of the tuning and loading capacitors from C1 and C2 respectively.

The p.a. tank coil for the 7-28 MHz bands is wound on a 1 $\frac{1}{2}$ inch, grooved ceramic former and it was easy to solder on the required taps. The additional 3.5 μ H for the 3.5 MHz band consists of a separate coil of thick enamelled wire, soldered to the end of the grooved coil.

The power supply relay, RL1, which is operated from the FT-75 relay output socket, is a silver contact, heavy duty component from Pye equipment, by Magnetic Devices, whilst the antenna change-over, RL2, is a surplus, two pole device, with normal contacts, but ceramic insulation.

All controls are on the front panel with power supply and r.f. output sockets at the rear. The circuit diagrams of the amplifier and power supply are shown in figures 1 and 2 respectively and the physical layout in figure 3.

This amplifier has operated very satisfactorily on the parcel shelf of my Triumph "Dolomite" for several months, enabling me to compete with the FT-101 boys whilst retaining the compact saloon car I want.



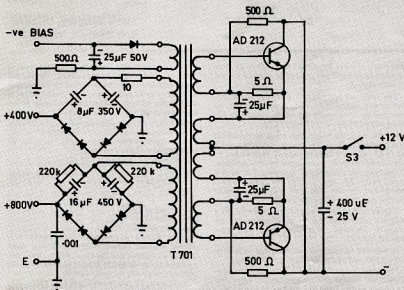
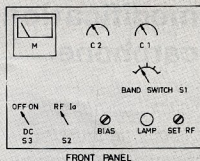
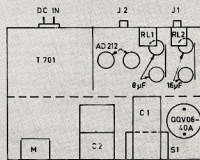


FIG 2 MODIFIED PYE POWER UNIT

NOTE. If T701 or complete unit cannot be obtained use design in "Radio Communication" Sept 1972 pp 576-7



FRONT PANEL



PLAN

FIG 3 FT75 LINEAR AMPLIFIER

Heathkit 2 Metre FM Equipment

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modifications to the MR6 A carphone

Steve Gregory, VK3ZAC
Bob Bennell, VK3ZAC

"Lynmere", Learmonth, 3352

It appears there has been a sudden influx of the multi-channel AWA Car Phones on to disposals markets over recent months. For those who have obtained one of these units here are some notes and information on improvements to existing circuitry, and modifications to upgrade the efficiency of the unit.

Bob, VK3ZAC, has spent 6 years in the commercial servicing field and once fostered over 100 of these mobile units as part of his service responsibilities.

The basic MR6A should realize 10 to 13 watts with 1 to 2 mA grid drive to the QEE03/12. Only the exceptional units with the "right" valve combination seem to be capable of the higher power output.

The first modification attempted to the transmitting section was the second doubler stage V20 which normally used a 6C4. This was changed to a 6AK6 pentode.

An important point to remember whenever any valve substitute is contemplated in these units is the filament configuration to enable the set to operate on either 6 or 12 volts, positive or negative earth.

The filament current of any substitute valve should match the one removed otherwise the balance will be upset, resulting in a deficiency of voltage on one rail and too much on the other.

The 6AK6 power output pentode draws .15 amps at 6.3 volts which is identical with the 6C4.

A quick consultation of the valve data book shows few modifications to valve connections are needed to make the change.

The grid lead from TR10 is shifted from Pin 6 to Pin 1. Grid 3 of the 6AK6 is connected to the cathode by bridging Pin 2 and Pin 7.

The centre post in these units is used as a HT busbar, so do not bridge to earth by accident, or deliberation!

The anode connection remains the same, as do the filaments; however Pin 6, vacated by the

grid feed, is now by-passed by a .001 uF disc ceramic and fed from the HT busbar via a 4.7K ½ watt resistor.

The high voltage current is up by some 8.5 mA and a substantial increase in drive can be realized by connecting the anode circuit to the same 400 volt rail as the QEE03/12.

In this way the multiplier stage is keyed up along with the final. The anode coil may need 1 or 2 pF across it for resonance. This is due to the lower internal capacitance of the pentode. Drive will be somewhere between 2.4 to 3.8 mA, with 2.6 mA being the figure when connected to the 200 volt rail only. Power output should be around 15 watts.

The second stage of modification would be a distinct advantage for mobile operations or country repeater operation, and will cost around \$10.00.

It involves replacement of the final tube with a YL1240, and the driver with a 12BY7A.

The first question raised was current consumption. Would the power supply carry the increased drain from the higher power tubes? From tests on the final product we have seen that no ratings are exceeded and there is no appreciable difference between the running rail voltages in either the modified or unmodified condition.

The YL1240 is a bigger brother of the QEE03/12 and for similar drive input will give up to 30 watts output.

The large 9 pin socket is available locally and 10 minutes work will see the 9 pin ceramic socket evicted, the hole enlarged, and the new socket soldered or screwed into place. Pin 5 of the new socket points toward the first tank enclosure.

All the components and leads removed from the 3/12 socket are reconnected to the appropriate pins on the YL1240 socket. The connections are identical except that the socket is longer. A trial was given to a modified grid input circuit. Normally a 10K resistor is connected to each grid. The coil TR13 was centre tapped and fed from bias through a 1.3 µH RFC and a 6.8K ohm resistor. Bias was identical when returned.

Next step is the removal of all components and leads from the 6C4 socket, its eviction, and enlargement of the hole to take the old 3/12 socket (if in good condition), or a new ceramic 9 pin socket.

The choosing of a tube to drive the final is open for discussion at this point. The 6AK6 could possibly drive the final to full output without modification, but we found that it loaded the circuit too much, resulting in inadequate drive.

The 12BY7A is a sensitive pentode and gives good output when used as a doubler in this circuit. Current consumption is in the order of 25 mA plate, and 6 mA screen.

The 5763 draws 50mA plate and 6mA screen. The 7551 draws 80mA plate and 5.1mA screen when used in similar conditions.

Another point is that the facility of 12 volt filaments in the 12BY7 allows use of the 12 volt rail for a supply source. However, when the 6C4 is removed from the upper rail, 150mA drain is removed, thereby causing unbalance. V15 (a 6BH6) is elevated to the upper line adding 150mA consumption; LP1 (the pilot lamp) is connected to the lower rail and replaced by a 12 volt 1.5 watt version drawing 100 mA.

The additive currents for both rails now equal at .60 Amp each. The 12BY7 draws .30 Amp across the 12 volt rail and the YL1240 draws .38Amp.

With filaments now in balance, components for the second doubler stage are selected for best performance.

TR10 (the 2nd tripler stage output) would not tune due to increased capacity, so a new approach was chosen where the transformer was modified to a single wound coil, and capacitive resistive coupling was applied to the 12BY7.

A 100K grid leak was found to be too high and a 68K realized optimum drive. As with the previous modification when a 6AK6 was substituted, the screen grid is taken from the keyed HT rail via a 4.7K and .001 decoupler.

The anode circuit is fed from the HT rail via RFC and .001 decoupler.

The rewind coil on the TR10 former was 8 turns of 18 gauge enamelled copper with a 5pF ceramic across the former; the coil resonates at 73MHz with the tuning slug.

HT feed through TR10 to the 6C4 is via a 1.3 µH RFC and .001 decoupler. To resonate the output stage of the 12BY7, a 3.9 pF was placed across the TR11 coil. By experiment the optimum output against drive was found to be when 6.8K ohm was used and 3.3mA of grid drive obtained. The previous standing bias is retained to all the stages in the driver section and no modification was needed to the final tank circuit.

The PA draws 100mA and, under bench conditions at 13.5 volts, delivers 25 watts output.

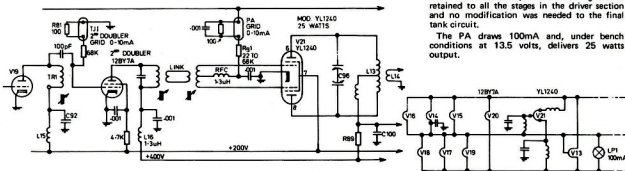


FIG.1 MODIFICATIONS TO MR6A CARPHONE.

TABLE

| Second Tripler: | Second Doubler: | P.A. |
|-----------------|-----------------|-----------------------|
| 6C4 | 6C4 | 3/12 |
| drive 0.5 mA | drive 0.75 mA | drive 2.0 mA |
| | | Power output 12 watts |
| 6C4 | 12BY7 | YL1240 |
| drive 0.5 mA | drive 0.82 mA | drive 3.3 mA |
| | | Power output 25 watts |
| 6AK6 | 12BY7A | YL1240 |
| drive 0.85 mA | drive 1.35 mA | drive 4.0 mA |
| | | Power output 31 watts |

The figures above show the increased performance obtained and includes figures for the optional 6C4 VS. 6AK6 as the 2nd tripler, which we have not reported on, but which gives the last little bit of performance available from the system. The modification is not essential and is only listed for reference. On the second tripler socket, as with the stage 1 doubler modification, Pin 6 is changed to Pin 1 which is the grid connection; Pin 2 is connected to Pin 7 and earth; Pin 6 is fed from the keyed 200 volt rail via a 4.7k ohm and .001 decoupler.

After retuning the PA coil and grid input the extra drive conditions will be realized.

Modification to Microphone.

There are two ways to achieve rocking armature operation. One is the direct substitute of the transistor pre-amp unit designed by the manufacturers as a replacement for the carbon insert. The other is the replacement of the 12AU7 with a 12AT7 and removal of the Input Transformer. Then connect the rocking armature in place of the transformer secondary.

Modifications to the Muting Circuit.

These were made to improve the time constant and audio frequency response. Instead of referring to substitution, we print the new circuitry (Fig.2) and leave the techniques of placement of the new components and replacement of the old to the discretion of the constructor.

Modification to the Front End.

This simply involves the replacement of V2, the second Mixer, with a type 6CY5. The noise figure of this tetode is substantially lower than the pentode it replaces. Retuning is necessary and, although the book states an increase in filament current, 175A to 200A, the unbalance benefits the transmitter line, and volts are 6.1 against 6.4 for a 13.5 volt rail instead of a 6.25 balance. Inclusion of a small resistor on the lower rail will rebalance the lines.

Modification to the Power Supply.

To reduce the rise time of the switching transistors, and consequently the dissipation, the 2 feedback resistors R103 and R104 are increased from 330 Ohm to 560 Ohm, 1 watt, and across R98 and R101 are connected two back-to-back electrolytics. The values are 20 microfarad and the positives or negatives are connected together, creating a miniature 10 microfarad non polar capacitor.

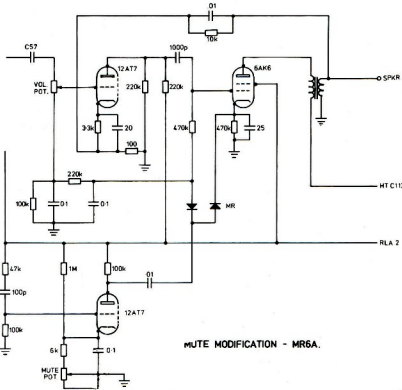
In the voltage tripler section, C112 is supplemented by an additional 24 microfarad electrolytic 450 VDCW, 600VDCS.

In our rig we also changed the two doubler electrolytics, substituting 33 microfarad 450VDCW for the existing 24 microfarad values of C108 and C109.

Conclusions

This is definitely a project for those with time on their hands; but results in an improved nice-to-listen-to rig, well behaved, and with that little extra "oomph" for the marginal contact or armchair copy across town.

Those who have heard the rig used by VK3 ZAZ mobile in country areas will probably verify that it is easy to copy and as good as any others heard. No claims to fame are made other than this, and we hope to hear some results from those who desire that little extra, without going "you know what."



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Thinking of going to Europe on holiday or maybe on business-cum-pleasure? David Verity of Whitehouse Public Relations, 67 Christie St., St. Leonards, N.S.W., 2065, ph. (02) 439 2611, sends along some details of holidays in Europe with DX at your fingertips. Perhaps not so many people will know about the pleasures of pottering around Europe in a caravan or motor caravan, tent or what have you. Beware however of going on a tour in summertime, especially June to September, without advance reservations. This applies also to camping sites which get very very crowded at that time of the year. Remember also there is not too much outback in Europe for ad hoc camping or overnight caravan halts.

The Club Radio Stations listed in this article most certainly are located in the very heart of Europe. More than sufficient historical places close by and such scenery as can only be described as beautiful — so long as the WX does not intervene. Literally thousands of VK's and ZL's can be found ambulating round Europe. Many take advantage of the 'off-season' period March to May — the spring — when the weather can be temperamental, particularly in the more northern parts of Europe, but how beautiful it can be when the sun shines. Apart from the places mentioned, do not forget to include a visit to 4U1ITU in Geneva if you can. The DX-tour might perhaps be more fun for a full licensee as opposed to the limited operator.

EUROPEAN HOLIDAYS FOR AMATEURS

A group of active Radio Amateurs from four different countries recently launched a new venture called TOPTOUR HAM CLUB. The club plans to offer all licensed amateurs the opportunity to enjoy their hobby during their holidays.

Many countries already have reciprocal agreements which permit foreign amateurs to obtain vacation licenses in the host country. The Club is in a position to secure such vacation licenses or assist in procuring such documents.

In order to assist the amateurs in their amateur activities the Club has established facilities in a number of holiday centres in Europe. All club Stations have been placed in first class hotels.

At this time there are Club stations operating in SWITZERLAND, GERMANY, LIECHTENSTEIN, PORTUGAL and AUSTRIA.

Moreover, the club can make available VW-Campers with mobile amateur station built-in.

Any licensed amateur from Australia is eligible for guest membership. Toptour Ham Club has close relations with SWISSAIR and several well-known Travel Agencies. As a result it can provide the vacationing amateurs "tailor made" holidays at the lowest prices.

TOURIST PROGRAMS

The travel program can be arranged according to the needs of the vacationing amateur and his family. Rates are based on a minimum stay of 7 days at each Club Centre (minimum in Portugal, 14 days). It is also possible to provide for interruption in the program to allow the amateur to use part of the time for business purposes. Places other than the listed Ham Club Centres may also be visited and included in the program.

ACCOMMODATION & MEALS

All rates quoted are based on rooms with double occupancy, with or without bath, in selected hotels or in a Club House. The rates at most destinations include 2 meals (continental breakfast, plus either lunch or dinner), and Toptour Ham Club will undertake to secure the vacation amateurs licenses and assist in making the necessary application. The vacationing amateur will get his own licenses and call letters for each country to be visited. Any fees for these are included in the overall prices quoted.

However, it is understood that due to the considerable time needed to obtain licenses and call signs for the vacationing amateurs, a complete questionnaire, and photostat or Xerox copy of the home license (for Portugal the original, which will be returned) need to be completed and sent at the time of booking but not less than 2 months in advance of departure (for Portugal 3 months).

THE VW — CAMPER

A comfortable vacation home on wheels, the camper provides room for 3 grown-ups and 1 child. Radio equipment consists of an FT 101 (Sommerkamp 277) for 5 bands, CW and SSB with 240 Watt PEP input, a Drake W-4 HF-Wattmeter, an electronic key (ETM2). A dynamic mike is also provided. There are two loudspeakers: One in the living area, the other above the driver's seat, built into the roof.

The antenna is a roof-mounted HUSTLER mobile antenna. The station can be switched to AC current for stationary operation on camp grounds.

All the station gear is conveniently arranged on a modern desk. The YAESU FT DX 400 is mounted on top of a speaker console. The entire 5-band 80-10m rig, operates on CW, SSB and AM with a full 500 Watts PEP input. A DRAKE W-4 WATT-METER allows the continuous checking of the HF output, as well as the Monitoring of



Overlooking Bregenz, Austria, the new Top Tour QTH for this area is the Berghof Clauf perched on a mountainside overlooking Lake Constance.

the SWR. There is also a high-level output DYNAMIC DESK STAND MIKE with touch control bar for easy PTT operation, and for the CW man a modern ELECTRONIC KEYS ETM-3 also permitting squeeze-keying.

Additional conveniences afforded are: A DIGITAL CLOCK, a HIGH INTENSITY READING LAMP and a set of HIGH QUALITY EARPHONES. The small SWITCH PANEL BUILT INTO THE DECK, HOUSES THE MAIN SWITCH for the station with a SAFETY LOCK AND KEY, as well as a CO-AX SWITCH for the antennas and the 50 Ohm DUMMY LOAD.

Depending upon the location of the individual Club Stations one or two of the following antennas are used: — FB 53 JUMBO BEAM with 5 elements on 10-15m and 3 elements on 20m, driven by a HAM-M ROTOR and activated through its well known control box.

— FD 4 WINDOW ANTENNA with a coax-feeding for 4 bands, generally used for 40-80m.

The entire station is laid out with comfort and convenience in mind.



Sub-tropical is the only way to describe the Swiss city of Lugano, the southernmost city in the country. Located south of the Alps, dipping deep into Italy this Top Tour location offers the best of Swiss and Italian hospitality.

THE STATIONS

H89: Bad Ragaz — (Club Radio Station No. 1)

BAD RAGAZ is world famous for its mineral springs. It is a health spa of the first order with Thermal baths and the best medical facilities. The town has numerous attractive parks, endless possibilities for vacationers who like sports of any kind, Golf (18 holes) mini-golf, horse-back riding, swimming, fishing, flying and soaring, skiing and mountain climbing.

HOTEL CRISTAL CH — 7310 BAD RAGAZ

This is a new Hotel with its own enclosed swimming pool, sauna (Swedish steam bath), large restaurant, large lobby, bar and reserved Club Room with Radio Station.

Other world famous tourist centres can be reached by train or car in a relatively short time. St. Moritz, Pontresina, Davos, Klosters and Arosa.

H89 QTH: ZWEISIMMEN

Surrounded by Pre-Alpine meadows, forests and mountains, this is an ideal spot for recreation, rest and summer and winter sports. There is a new heated swimming pool, tennis courts and mini-golf courses, beautiful fishing streams, and an enclosed gondola-type chair lift to the top of famous Rinderberg.

(6,200 ft.), trains and a ski school.

QTH — HOTEL KRONE CH-3770 ZWEISIMMEN

The Hotel is modern, centrally located, yet quiet. Sunny meeting rooms, bar, banquet room, beautiful garden open to guests, garages, orchestra and reserved Club Room with Radio Station.

HB9: QTH: LUGANO

In the southernmost part of Switzerland, Lugano is near the Italian border, with mild climate. It is one of the loveliest spots in Europe and offers the tourist every facility.

QTH — KINGS HOTEL CH-6900 LUGANO

This is a modern "skyscraper" with large restaurant, meeting rooms, bar, garage in the basement and reserved Club Room with Radio Station.

Excursions — By car or train to Locarno, Ascona and the Italian cities of Milano, Como and Varese. Sight-seeing trips by boat to a number of quaint and interesting places along the shores of the lake.

HBQ — QTH: GAMPRIN, LIECHTENSTEIN

Tiny Liechtenstein is a separate and independent country, which is ruled by Duke Franz Josef II. It is situated in the Rhine Valley between Switzerland and Austria and is only about 17 miles long and 5 miles wide.

Gamprin is a small village on a hill in the middle of the Rhine Valley, about 7 miles from the Capital, VADUZ. This is an ideal spot for DX men.

QTH — FORSTHAUS VALEPR — SPITZINGSEE, GERMANY

A historic Inn, surrounded by woods in the Bavarian Mountains, close to the border of the Tyrol. It features a rustic atmosphere, large, friendly rooms with pine-panelled walls.

The Radio Shack here features a COLLINS 75 S-3 plus LINEAR with 3KW input, a Beam and Vertical Antenna.

QE9 — QTH: BREGENZ, AUSTRIA

The picturesque town of BREGENZ is situated at the east end of Lake Constance, where the Rhine River flows into the Lake at the point where the three countries Austria, Germany and Switzerland meet.

A variety of entertainment is available to the tourist, mini-golf, boating and water-skiing, sailing and fishing.

QTH — HOTEL BERGHOF — BREGENZ, AUSTRIA

This modern Motor Inn is located on a hill overlooking the town of Bregenz. Its view of the Austrian, German and Swiss mountains is truly unique and awe-inspiring. It is a new Inn with an excellent restaurant, a huge terrace, Tap Room, Bar-In-The-Rocks, Reserved Club Room with Radio Station. Rooms, modern with bath, phone and balcony.

The Radio Shack features Beam and Rotor; also a separate antenna for the lower bands.

CTI — QTH: ARMACAO DE PERA, PORTUGAL

Armacao de Pera is situated on the southern coast of Portugal in the Province of Algarve, about 30 miles west of the airport of FARO.

QTH — TOPTOUR CLUB HOUSE, PORTUGAL

The Club House is located on the beach and contains 4 double rooms and 1 single room. The large radio shack is enclosed and has a 5 element Beam and Ground Plane Antenna.

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audio rectification hints

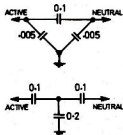
R. S. Gurr, VK5RG

Reprinted from VKS Journal, January, 1972

Just like Channel O interference, when amateurs get into audio frequency amplifiers, nothing can be done at the amateur rig to cure the problem. A passing taxi or a nearby two-way service could cause the same problem, but it is usually the amateur that gets the neighbors' wrath. If affairs are friendly, and you haven't been abused, and you feel you would like to help the guy, perhaps only for the technical exercise, here are a few hints on possible cures.

POWER LEADS

Once believed to be the main source of R.F. input to audio-stereo systems. With valves, it was, but in this day of solid state, very likely no problem. An Aegis MF2A line filter can resolve some cases and will reduce audio plops and clicks — a simple backyard line filter can be improvised by twining the excess cord through a circular ferrite, perhaps an old TV deflection yoke core. A 10' length of 3 x 23/.0076 flex thus entwined with loose plugs and sockets can be used for the chokes of an experimental line filter. To accompany these, some "jumbo" type double adaptors with the following condenser combinations should be made.



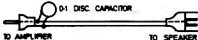
An experimental lash-up should give you a lead to the best type of filter. In extreme cases the above capacitor combinations wired direct to the power transformer may be necessary. Often a direct earth from the radio chassis to the ground is all that is required — this could apply especially to some imported equipment where the manufacturer has ceased to include electrostatic shields in power transformers.

OUTPUT LEADS

Although we would be led to believe that the speaker leads on modern hi-fi combinations are shielded wire, a survey reveals this is only so in a few cases. Long open speaker leads are good aerials, and will conduct RF back into the sensitive preamplifier circuits, where it is rectified and amplified.

Most commercial units use either screw-on or RCA type connectors — some have been found using 3.5 mm plugs and standard headphones type plugs for this purpose. With screw-on connectors, a 0.1uF polyester or ceramic capacitor direct across all speaker output terminals, at the connector strip, will stop speaker lead pickup in most cases. A useful item to help try this same cure on sets using RCA or other jacks is to have a couple of adapters already made up, so that they may be plugged in series with the loudspeaker leads.

NEVER do this switch-over with the set switched on — open circuits on output stages are still disastrous!



INPUT LEADS

With the use of transistors, the need for intimate shielding of all circuits is reduced, providing the hum field of the power transformer is made insignificant. As a consequence it is not unusual to find input leads from pickups that are not shielded. A 0.005 or so disc ceramic on a plug adaptor is useful if the input connections are removable. If they are not, it will be necessary to start bypassing at the first available point nearest the amplified input. The number of input combinations to be met are many. However, it will be necessary to bypass at least the input terminals on the PCB, if this cannot be done at the chassis input terminals on the PCB.

In extreme cases, changing the pickup leads to double screened wire will help, and may also give reduced hum from the motor field. Use a series RFC to the input elements, and 0.005 bypass capacitors are often used.



OVERALL EFFECTS

With input, output and power circuit pickup reduced to a minimum, the remaining RF pickup, if it still exists, is by direct receiver wiring and board pickup. You really are in for fun if you need to go to the extent of lifting components from a PCB to install series filters. If may be necessary, but try every means of shunt bypassing before you attempt this, as it is so easy to upset the bias conditions and so hard to fit the parts back in — even ferrite beads become difficult to fit sometimes.

Direct-pickup by wiring is best tested back in the freedom of your own home shack/workshop. Most of the previous tests can be conducted in the owner's lounge room. A 27 MHz handprobe, or a signal generator with a probe, or even a GDO with 50 Hz modulation, may be of assistance. The portable source as described above, should be moved about over the pre-amplifier section of the wiring and the areas where intensity of interference is great should be noted. This will be near unscreened volume control leads, and either bypassing of the next input element (0.001uF) or screening the leads, or both, will be necessary.

If it is proved that RF close to the board is being rectified, but it is hard to pick the exact element, cover the section with paper held down with masking tape and then screen the lot temporarily with "Alfoil". At your leisure you can then peel the metal away in parts and see which area is the most sensitive to its removal.

CONCLUSION

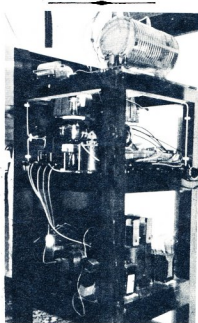
The above brief notes may be of assistance to anyone about to attempt the de-lousing of an audio TV-stereo-radiogram system, although they are necessarily incomplete. It is difficult to

discuss the aspect of receiver-audio design with servicemen, manufacturers' representatives, and the manufacturers themselves. Apparently due to lack of legislation on receiver design standards, this aspect is continuously overlooked. Remember, however, the same trouble can be caused by any other AM or SSB transmitter that may be set up close to the amplifier in question, consequently the burden of cure should not necessarily be the amateurs.

If you have TV or audio appliances in your home that suffer no interference, your invitation to an inate neighbor and his uncomprehending technical advisor to visit and observe for themselves is a good way to start to improve relations. There is a "no man's land" existing in this area, and since usually the amateur is the only one involved who understands RF, perhaps if he got off his tail and offered his assistance early in the piece, rather than procrastinating on legal points, he would improve his public image.

REQUEST

The writer would welcome details of case histories, mainly technical, on methods of cure. I do not require any further information on the legal aspects, or how nasty some neighbors can be!



Station 2WU—the official station of the N.S.W. Section of the Wireless Institute of Australia in 1923. Many components for both amateur and commercial experimental stations were "home-built" in these days and this illustration is typical of an experimental station of the time. It was built by a member of the Institute named James and installed at the residence of Mr. H. A. Stone, 2CX, until 1925 when it was transferred to Mr. Basil Cook's residence. Basil Cook operated as XADW.

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NOTE: Some price reductions since last month although today, 1 August, 1973, two weeks after the Government's 25 per cent Tariff Cut, I still have to pay full 45 per cent import duties (!) on new imports...
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SWAN TV-2C 144 MHz transvertor, 28 MHz input, 240 Watt PEP output on SSB, receiver convertor noise-figure less than 3 db with two FET i.f. stages and FET mixer, 5894-B transmitter output stage, to be powered externally from the supply of the driver-transceiver\$450 \$430

SWAN VHF-150 144 MHz linear amplifier, 150 Watt input on carrier with only 2 Watt drive, built-in 240V AC powersupply, with input-output relays to by-pass linear on reception, optional Class C operation for FM and CW or Class B operation for SSB, twin-tetrode RCA 5894-B\$375

YAGI ANTENNA 9 elements 144-147 MHz, 9' boom with gamma-match fed radiator, perfect 52 or 75 ohm match, locally produced, complete\$30

ON ORDER solid state 144-148 MHz amplifiers, 12 V DC operation, no switching required for use with transceivers, using tuned input and output lines and diodes switching. Also, 144-148 MHz masthead receiver pre-amplifiers, can be left in circuit unhindered on transmission, giving 12 db gain when switched to reception at very low noise figures, 12V DC.

POWER OUTPUT METERS

GALAXY RF-550-A 0-400 and 0-4000 W in line meters, with 6 position built-in coax switch\$75

SWAN VM-1500, 4 ranges 5 to 1500 Watt rf power in line meter\$50

NOISE BRIDGES OMEGA T antenna noise bridges, 0-100 MHz indispensable for intelligent antenna work, still only\$25
(see E.A. July 1973)

YAESU-MUSEN HF SSB TRANSCEIVERS

Four latest models kept in bond storage in Sydney, approximate prices quoted for supply with approved BY-LAW (import duties exemption) application, bond-storage and -clearance and documentation charges which are presently unknown and may vary from case to case, are extras

FT 101\$500

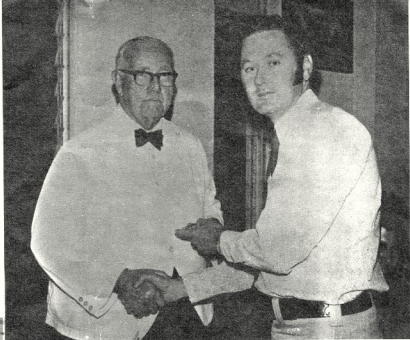
FT 200-FP 200 combination\$325

FT DX 560\$400

FT DX 401\$475

North Queensland Convention 21st-22nd July, 1973

The Saturday evening dinner dance was attended by 130 people. Highlight of the evening was the after dinner talk by Newton VK4QW. Peter, VK4QD, President of the Townsville Amateur Radio Club is shown presenting honorary membership of the Club to Newton with a suitable memento of the occasion.



Left—
The commercial display of SSB equipment by courtesy of Fred VK3YS, was well received and many amateurs stood gazing at it with that far-away look in their eyes.

Below—
Ron VK4ZLC broadcasting the Queensland Divisional news on Sunday, 22nd July, from the North Queensland Convention. On the left is Peter VK4QD, T.A.R.C. President. Behind is Newton VK4QW waiting to take the call-back on 14MHz.



Left—
Evie, VK4EQ, hostess for the Saturday evening dinner dance, cutting the VK4TC cake



a review of the BARLOW WADLEY XCR-30 MARK 2 receiver

— A review by the AR technical staff.

The Barlow Wadley Receiver has already been the subject of two technical reviews: firstly in the RSGB magazine "Radio Communication" for January 1973, and also in Electronics Australia for May 1973. In this review it is proposed to give a picture of the receiver in operation at a typical amateur station by comparing it with some of the better known pieces of amateur gear.

The "Barlow" is a general coverage receiver with a frequency range of 500kHz to 30 MHz effectively in 30 bands each of 1000 kHz. It does not employ any form of bandswitching, the appropriate range being selected by a MHz dial calibrated from 0 to 30 MHz. The kHz dial is calibrated at 10 kHz intervals, the actual divisions being spaced approximately 2 mm apart. The receiver is complete in itself, the cabinet measuring 292mm wide x 190mm high x 98mm deep (11½" x 7½" x 3 7/8"), and the weight including batteries is 4.14kg, or 9 lbs. 2 ozs. Reference to the photos shows that the set has the appearance of a typical large Japanese portable receiver, but it is, in fact, manufactured in the Republic of South Africa.

Front panel controls, apart from the MHz and kHz dials, include an antenna trimmer which actually tunes the front end throughout the entire range from 500kHz to 30MHz; an SSB clarifier control giving a "band spread" tuning over about 6kHz; a mode switch to select either upper or lower sideband, or AM reception, and a combined off/on volume control. There is also a calibration re-set control, and a small tuning meter.

The "Barlow" operates on the Wadley Loop principle which is also used in the well known Racal receiver and also in the locally designed Delta-net receiver. In order to cover the 30 MHz range, the front end oscillator is tunable

from 45.5 to 74.5 MHz. This is then mixed with the harmonics from a one MHz crystal in a complex system to produce output into a tuneable IF range of 2 to 3 MHz. A 455 kHz IF section follows, which includes two ceramic filters, one giving 3kHz selectivity for SSB, the other 6kHz selectivity for standard AM reception. Both diode and product detectors are provided, the appropriate one being selected by the mode switch. The audio stages are quite conventional and provide in excess of 5 watt output into the built-in speaker or to a 3.5mm output socket for external headphones or speaker.

Before proceeding to "on air" impressions, here is a run down on the more important specifications.

Frequency Scale Accuracy:- Within 5kHz at all frequencies.

Resetting Accuracy:- Within 1kHz at all frequencies.

Selectivity:- 6kHz, overall on AM, 3kHz, overall on SSB.

Frequency Stability:- Will hold an AM transmission in tune indefinitely, and an SSB transmission on pitch for long periods of time.

Sensitivity:- Antenna circuit thermal noise audible at all frequencies.

Image Rejection:- 50db on all movable image channels. 60db and better on immovable images.

Current Consumption:- 20mA, quiescent from 6 internal "D" type cells.

THE BARLOW ON AIR.

Initial operation is simplicity itself. To set the receiver to any given frequency it is only necessary to move the MHz. dial to roughly indicate the whole number MHz. range, then move the kHz. dial to the required frequency. The exact frequency is then determined by

simply adding the two readings together. It might be thought that setting of the MHz. dial is a critical process, perhaps in the style of the old band set, band-spread, receivers of bygone years; however this is not the case at all. The action is more related to a switch than to a continuously variable control and when a signal is located, it is only necessary to move the MHz. dial slightly back and forth to peak the signal. The frequency does not vary in any way at all.

For the purpose of our tests, the Barlow was operated on its inbuilt telescopic whip antenna with no external connections at all. The comparison receiver used was a Collins 7553 connected to a tuned, long wire antenna. One of the first things noted was the difficulty in tuning SSB using the kHz. dial alone. The drive ratio is this is only two to one and, although a large edge type control is provided, it was more good luck than good management if a signal was resolved immediately.

However, it is not intended that SSB signals should be resolved on this dial. The clarifier control provides smooth and easy resolution once the signal has been located. When the process has been mastered, tuning becomes very easy and SSB signals could be located almost as easily as on the Collins. The overall sensitivity of the Barlow on its own whip antenna is quite incredible. On the 20 metre band any signal over "S3" on the Collins was readable on the "Barlow". The addition of an external antenna to the "Barlow" made only a small improvement, possibly due to the difficulty in obtaining an impedance match into the external antenna connection of the receiver.

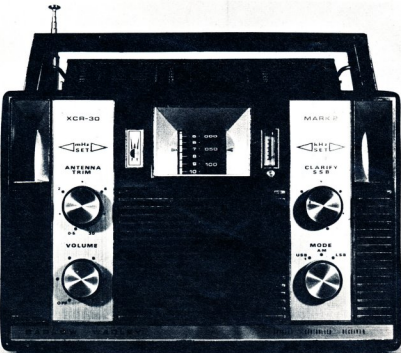
At 7 MHz and lower the Collins pulled away in sensitivity from the "Barlow" and it was found that either an earth or external antenna was needed to restore full sensitivity. Stability of the receiver was also most impressive. In the SSB position, drift did not exceed 400Hz., from a cold start, over a period of several hours operation. Most of this drift occurred during the first half minute due to shift in the BFO, the actual drift in the front end oscillators being so low that it was difficult to measure.

One surprising discovery was that the set caused quite a bit of TVI on both Channel 0 and 2 when tuned around the one to two MHz. range. This occurred when the "Barlow" was used within a twenty-foot radius of the TV receiver. If you live in a low signal area this could be a problem. Also it seems that strong signals from Channel 0 and 2 can cause birdies on the "Barlow" when tuning around the one to two MHz. region. However when used in average locations these effects should not present too much of a problem.

To sum up then, the "Barlow" receiver appears to outperform all other general coverage receivers in the price bracket around \$200. It would be hard to imagine a better receiver for the short wave listener.

However, to use the "Barlow" as an amateur station receiver presents a few problems. Firstly, some means of muting would have to be devised, preferably a system that left the BFO operative in order to eliminate the initial switch-on drift. Secondly, and it is perhaps only a minor point, the appearance does not fit in with normal amateur gear.

The Barlow Wadley XCR-30 Mark 2 receiver is currently available from at least one of the advertisers in AR.



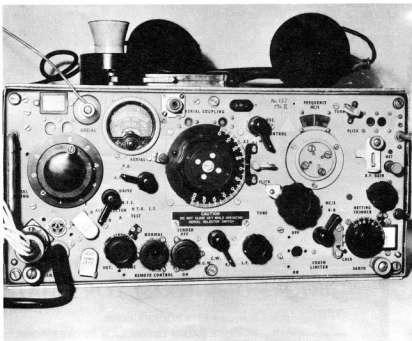
transceivers used by amateurs post-war

Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

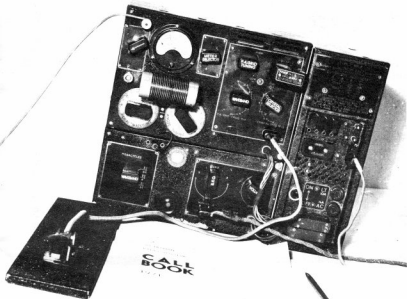
122 TRANSCEIVER

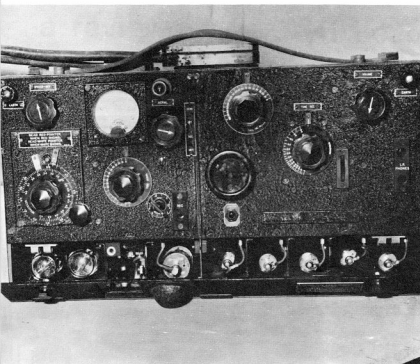
The 122 transceiver was possibly the most used of the WW 2 ex-army transceivers. It covered 2 to 8 MHz in two bands, which meant it covered 80 and 40 metres with no modification. On CW it had an output of 12 to 14 watts and on AM, 7 to 8 watts. The 122 was one of the few sets which had plate and screen modulation; in fact a 6N7 was used in Class B to modulate the 807 output valve. It nominally operated from a 12 volt battery and featured, for its time, one of the lowest current drains on receive of any similar transceiver. These sets were VFO and crystal controlled.



TYPE 3 MK2 TRANSCEIVER

The Type 3 MK2 was designed as a "spy" set for use in occupied territories. These sets used a very versatile power supply and were capable of operating from 6 volt DC and from 110 to 240 volts AC. Their frequency range is from approximately 3Mhz to 15Mhz so covering 80-40-20 metres. This is purely a CW unit and an output of 14 to 15 watts could be expected from the 6L6 in the final. Many of these were modified to fit a plate and screen modulator so making them more useful for the average amateur. This set was crystal locked on transmit and fully tuneable on receive.





FS6 TRANSCEIVER

The FS6 is one of the few transceivers that appear to have a wholly Australian history. It covers, in its original form, 4.2MHz to 6.8MHz. They were easy to pull onto 40 metres and some chaps got them going on both 80 and 40 metres. They worked off a 6 volt battery and used a combination of battery style 2 volt valves and one 6 volt valve namely a 807. This is a AM/CW transceiver although it does use grid modulation in the AM mode. The output power on AM was 4 watts and on CW 8 watts. The transmitter and receiver were both fully tuneable.

These three sets were probably the most popular of the transceivers which came onto the market after WW2. The sets no doubt were used in many a Remembrance Day contest. These particular sets were photographed in VK3UG's museum by Cyril Maude VK3ZCK.

BOOKS OF INTEREST FOR AMATEUR OPERATORS

| | |
|---|--------|
| ★ Phillips—1973 POCKET BOOK | \$2-00 |
| ★ NEWNES RADIO ENGINEER'S POCKET BOOK, 14th Edition | \$4-25 |
| ★ Badmaieff & Davis—HOW TO BUILD SPEAKER ENCLOSURES | \$4-20 |
| ★ Lytel—ABC's OF ELECTRIC MOTORS AND GENERATORS | \$3-15 |
| ★ Fantel—ABC's OF HI-FI AND STEREO | \$2-95 |
| ★ Lytel—SILICON CONTROLLED RECTIFIERS | \$3-15 |
| ★ Phillips—THYRISTORS | \$3-45 |
| ★ Phillips—FIELD EFFECT TRANSISTORS | \$3-45 |
| ★ Phillips—BUILDING HI-FI SPEAKER SYSTEMS | \$3-45 |
| ★ Frost—HOW TO LISTEN TO THE WORLD | \$4-00 |
| ★ Dover—BASIC THEORY AND APPLICATION OF TRANSISTORS | \$2-05 |
| ★ Sams—TRANSISTOR SUBSTITUTION HANDBOOK, No. 13 | \$3-15 |
| ★ Middleton—HI-FI STEREO SERVICING GUIDE | \$5-95 |

Add Postages: Local 35 cents, Interstate 65 cents

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Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

As stated last month I intended to build up a signal injector. Strangely enough I did build it, and it took all of half an hour to complete.

YRCS TRANSISTORISED SIGNAL INJECTOR

Bob Callander and his helpers in the projects section of the Youth Radio Club Scheme have been at it again with another winner of a project. The first project was a BFO kit which sold for \$2 plus 30c postage. Bob informs me that they have sold 100 of these kits. The signal injector that I built is their second project. I timed my construction time as noted above. I believe that depending on your skill in wiring construction it should take between 15 minutes and an hour.

A lot of thought goes into the design of these projects so as to present a simple, cheap, and effective piece of equipment. Once again they have succeeded. The signal injector is constructed on a small piece of matrix board, and the whole thing fits in a small plastic tube. Used, large hypodermic syringes are ideal for this job, as they have a rubber bung at one end and a small tube leading out the other to act as the probe outlet sleeve. Everything is in the kit to complete the job with the exception of a few inches of hook-up wire and a couple of inches of solder. There are two NPN silicon transistors, 4 resistors, 3 capacitors, matrix board, a penlite cell and the plastic case — plus comprehensive construction information. Bob (VK3AQ) indicates that future kits will have hook up wire and solder.

I found that the injector did not draw all that much current, in fact my unit drew about 0.2 ma. I decided to experiment a little with the collector resistor values which are 10k ohm as supplied, and gradually reduced them to the region of 2.2k ohm. This did in fact increase the output of the unit to a more useable level for some types of circuits. Mine finished up drawing about 0.6ma.

The on-off switch for the injector is formed by twisting and untwisting the lead to the negative terminal of the battery. Crude maybe, but it must be remembered that the signal injector will not be used every day by the average experimenter, so it will last a long time and is cheap.

Another advantage having the negative lead come outside the unit is that it can be used as an earth. I used a small lead with an alligator clip on both ends; one end clipped to the negative terminal of the battery and the other to the earth of the equipment under test. This brings up the effective output for some types of circuits where sensitivity is low or the impedance is low. Now one caution when the earth lead is used during the tests. NEVER use the earth when testing high voltage equipment. Why you might ask? If the earth lead is connected and then the probe is placed on a component operating at say 200 volts above or below earth, a very high damaging spike of current and voltage will appear across the probe capacitor and the transistor. These share the voltage in inverse proportion to their capacity. The probe capacitor has a value of 0.002uf and the transistor has a value across its junctions of

maybe 10pf. The transistor may have to stand momentarily 190 of the 200 volts. The type of transistor used in such a project as this will not normally have a rating above 40 volts Collector to Emitter. If you do not observe this warning you will ultimately find the injector just does not work. One of both transistors will have expired. I know, I had to find out the hard way. You do not have to! If you do use it on valve equipment, use it without the earth or, alternatively, only put the probe on parts of the circuit where the potential to earth is no more than about 20 volts. For instance the grids of most valves will be a safe place.

I have only two small criticisms of the injector, or more precisely the information supplied. The circuit drawing is hand drawn, and the pin connections of the average transistor are not included. Other than that I can do nothing other than recommend this kit for any newcomers or, for that matter, some not-so-newcomers like myself. The YRCS are selling the injector kits for \$2 plus 20c postage. They are available from Bob Callander of 383 Warrigal Road, Burwood, 3125.

There is one possible fault you may strike with the injector. Sometimes it will not work, and not for the reason mentioned previously. The leakproof batteries in vogue at the moment have a double bottom and sometimes these two layers of metal don't make contact — therefore no voltage. These batteries are designed to be used under slight compression. Some of the Japanese batteries appear not to be double bottomed and it may well be preferable to use them as replacements when the time comes. Figure 1 shows the circuit of the injector and the base diagrams of the transistors. As can be seen the circuit is simple and can form the basis of many other simple projects.

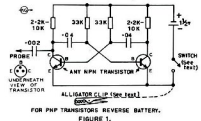


FIGURE 1.

USING THE INJECTOR AND HOW IT WORKS

Next month I hope to show you how a signal injector works, and how it can be used to fault-find the audio and RF sections of equipment. It can even be used as a tone source for a Morse code practice oscillator or for the modulation on an A2 type transmission. Do you know how a device which is oscillating at say 1kHz can be used on RF circuits? Wait for next month's instalment.

ODDS AND ENDS

The RF probe in the June Newcomer's Notebook can have one extra component added to prevent destruction of the OA91 diode. When this probe is used on circuits with high DC voltages to earth much the same problem as warned you about regarding the signal injector and high voltage can occur. To overcome this problem, I drew the circuit such that the high voltage pulse from the plate circuit of a valve transmitter stage will cause the diode to conduct — not

be reverse biased. To be doubly sure an NE2 neon indicator worth about 25c can be placed across the OA91 diode. The striking voltage of the neon is lower than the Peak Inverse Voltage rating of the diode. The diode should then last for ever, theoretically, as long as you do not put too much RF through it.

If you are an amateur how do you monitor your signal? You are required to do so according to regulations! There are many ways of doing this, but can your monitor tell you anything about your signal other than it sounds alright? Can you tell, for instance, how much modulation you have on your AM set, or are you flat topping on SSB? Can you be certain how much deviation you have on your FM set? I will be interested to hear what you use, because I believe that there is a dearth of good station monitors that are simple and effective.

"The Ham from Snowy River," by Alan Shewsmith VK4SS. (With apologies to Australia's Immortal Bard — A.B. 'Barjo' Paterson. Author of 'The Man from Snowy River' and 'Waltzing Matilda'. There were many who knew him, and his words had passed around that a contest big and rich was under way.

And from official sources, it was worth a thousand pounds.

So 'twas a contest big and rich was under way.

All the tried and rare OX's from stations near and far

Had mustered on the Ham bands overseas;

For contests long hard fighting where the raris are,

And put their rigs to battle with design.

There was Harrison who made it when he won the CO cap.

An old man with hair as white as snow;

But few could stay because when his blood was fairly up:

He'd go where the OX and rig could rig.

And Clancy of the Overflow came on to try his hand,

No better code man ever held a key.

For not one cap could he show him the heated rig would stand —

The Overflow had taught him well, you see.

One called in, a Novice with a small and weedy rig:

Something like a QRP'er underdressed!

But built to stand the climate and thrice so good for it's rig;

Gear that's by O'Hanlon's DX rig prized.

But still so small and tiny, one would doubt it's power to stay

And the old man said, "That rig'll never do

For a long and trying contest lad. You'd better give away:

A two day test is far too much for you."

So he waited, sad and wistful — only Clancy stood his friend,

"I think we ought to let him in," he said at last.

I'll warrant he'll be pricier' with us right until the end;

His rig's homebrew but he is mountain bred."

They found the DX raris in the first big pile up clump

And called hard from the mountain below.

The old man gave the orders, "Boys, go at 'em from the jump;

No use to try for fancy working now."

So Clancy tried to work 'em — he was breaking on the wing.

Where the best and boldest OX's came to take their place.

He turned his beam toward them and he made the ranges ring.

With his keyer as he met them face to face.

But the OX was not contented with the per go bump and black,

Resounded to the thunder of its cries.

And the OX's woe the echoes and were fiercely answered back

From the ionosphere pulsating in the skies.

When they reached the half way mark, soon Clancy took a pull.

The game would make the bravest, stay, relent.

The OX's lay thickly but still the bands were full

Of modified code urged on by victory's scent,

And the old man muttered, "I wonder 'We may bid the most good-day,

No man can hold them from here."

But the Ham from Snowy River wouldn't give the game away.

He might best around and give it all to see.

He was still among the callers as the sun began to rise.

— And other mountain Hams now sitting mute,

Heard him ply the keyer faster, he was right amidst the best

As he cut across the bands in his own time.

Then they lost him for a moment where two S's signals met

And widely spread — but a final glimpse reveals

On far and higher frequencies, the one calling wait.

With the Snowy River Novice on their heels.

And he logged them — now he logged them. Till he made the QSO

He followed like a bloodhound all the way

With a pace that never slackened — and as the records show:

He alone and unsisted, won the day.

But his handy mountain rig now could scarcely raise a watt.

The PA tube was red from pin-pointed

On his head and unsisted, won the day.

Until the Novice sent his final tap.

And down by Kozicuzko, where the pine clad ridges raise

Their torn and rugged battlements on high.

When the sun and clear blue sky, the white stars fairly blaze

At midnight in a cold and frosty sky.

And where around the Overflow, the red beds sweep and sway

To breezes and the rolling scud of sea.

The Ham from Snowy River it is a house word to-day,

And the others tell the story of his win.

a saga of the bug

Ken Gillespie, VK3GK

P.O. Box 5, Clayton, 3168.

The word "Bug", whilst being a trade mark, is known in radio circles as the generic name for any mechanical semi-automatic code key. These days the name has even been incorporated in a purely electronic device known as an E1-bug. However it is interesting to follow advertisements for the genuine article over the years.

The earliest such advertisement I came across appeared in a December 1911 magazine and is shown in the facsimile. Notice that it is the Horace G. Martin Vibroplex for \$10 and J.E.

Advertisement from "Modern Electrics"
December 1911

Allbright is the sole selling agent at 253 Broadway, New York.

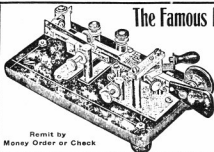
In 1921 it becomes Martin's New Improved Vibroplex Bug and is sold by the Vibroplex Co. Inc. (established 1890) now situated at 825 Broadway and the price is \$17.

By 1931, the Genuine Martin Vibroplex bug is still \$17 but a special radio model is introduced at \$25. The Vibroplex Co. Inc. has a J.E. Allbright as president. A 1942 advertisement shows Allbright still president but the Martin has been deleted and is no longer even

printed on the key. Price has dropped to \$15.95 and the firm is now at 833 Broadway.

The key is an expensive \$24.95 in 1968 from the company at the same address. For the first time, Mr. Allbright's name does not get a mention.

I notice that the company still advertises, but not so much of recent times. The original unit can still be bought, but more emphasis is placed on a mechanical device for people making electronic keyers. It seems a little sad to see the old keyer being superseded by the self completing dots and dashes of solid state.



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and **Sunday, October 6th & 7th, 1973**

Saturday—Electronics Display
Dinner, Evening Entertainment

Sunday—Carphone checks,
Barbeque at Hall's Gap and visit to
the beautiful Hall's Gap Wild Flower
Exhibition Details, Bookings.

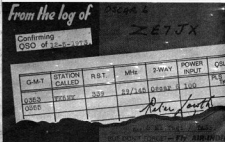
Max Grimble,
Wartook Wayside,
Horsham, 3400

Albert Cash, LZ889, Victorian Intruder Watch
Coordinator, shows an intruder teletype printout
being received on the 14MHz band.

PROJECT AUSTRALIS

with David Hull VK3ZCH, Chairman, Project Australis.

Don VK8HK has had the thrill of making one of
the more exotic satellite contacts through Oscar 6.
The QSO with ZETJX was well beyond the normal
range of the satellite and Don has the QSL card
to prove the contact.



Commercial Kinks

with Ron Fisher VK3OM

3 Fairview Ave., Glen Waverley, 3150

This month I am going to continue with the FT101 modifications published originally in the English "Mobile News", the journal of the Amateur Radio Mobile Society.

From the October 1972 issue here is some data on front end improvements for early models of the FT101.

"Simply because there must be thousands of FT101's in use throughout the world, in fixed and mobile installations, and because you cannot please all of the people all of the time, we receive a steady stream of suggestions for 'improving' the performance of this ingenious transceiver.

Sometimes the situation gets rather confused since some users complain of faults which are absent in the other owner's sets. What has transpired is that, whilst all are called FT101, there appear to be subtle differences between the components used in the earliest and later models. This is encouraging in a way, since it shows that the makers are constantly striving to improve overall performance in the light of customers' experiences.

The latest contribution is taken from notes sent to Sandy Duncan GM3DZB/m, by 9M2CPC from Penang Malaysia, whose permission we have to publish them."

Phil's opening remarks are important and confirm what we have suggested.

... I must warn that not everyone's

problem is the same. This is due to location, strength and frequency of interfering signal (s) etc. as well as model numbers being differently designed. I have also found, when comparing notes on results of modifications, that trouble has also been caused by differences in transistor parameters used in different sets. So with the above preamble I'll get on with the details. Bear in mind they are mostly gleaned from my own personal views, and experience. The problem as I see it can be broken down as follows:

1. Intermodulation caused by several strong out-of-band signals.

2. Spurious unmodulated in-set responses from either the various oscillators or harmonics of them, or those induced by the various diodes.

3. Blocking.

A. The front end diode, DD13, provides some spurious and unwanted signal. It can be removed (I have shorted it out so it can be put back if needed). Then if this is done lift off R49, 1K ohms, or remove it. The 30 pf C122 can be left in circuit, or removed.

B. The latest FT101 has a 14 volt pilot lamp placed in series with this line. I believe as an RF overload protection for the coil windings.

C. If the above is done it is advisable to replace the RF amplifier with a dual gate, diode protected MOSFET. The RCA 40673 is one of the best. I would suggest this change in any case. Any suitable substitute will do. D. Board PB 10778. There are two main causes of trouble on this board. (a) The first mixer. (b) The local oscillator. After considerable experimentation I found that replacing the first receiver mixer with a BF 173 and the local oscillator with a BC 109

(not 107 or 108) gave excellent improvement to cleanliness of unwanted, out of band signals and 'jingle-bells'. The oscillator certainly needed clearing up. The latest model FT101 uses a buffer transistor between the L.O. and mixer. I tried with some success but could not get both the transmitter and receiver mixers fed with the proper signal levels.

E. My set is now satisfactory. I have one more modification to make and that is to use a double balanced modulator, VK5PX and VK5XV swear by this one. I have tried so many mods in the mixer stages that have not improved matters that I am very sceptical about anything now. I am also not even certain now in which mixer the trouble really is. I was inclined to think in the first, then the second, and now I think the trouble is in both. F. The diodes in the noise blanker are another story and this also needs looking into."

Well there you are, go to it and let us know your results.

Before closing for this month, some information on the Fox-Tango Club. It is an association made up mostly of owners of Yaesu transceivers for their mutual benefit. Although originally organised for owners of the FT101, extension to other models is now being considered.

An interesting news letter is published at regular intervals. Milton Lowens WA2AQC; 3377-F Sedgwick Ave. Bronx, New York. 10463 USA, is the man to contact for details of subscriptions, etc.

My thanks to VK4NS for bringing my attention to this very worthwhile club. ●

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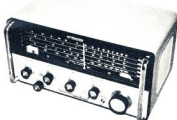
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E.C. 10 Mk II A.R. 9/73

Jamboree on the air

Every year many pleasant, successful visits are made by scouts to friendly amateurs, and interesting contacts are completed. But sometimes we hear:

- VK2XYZ this is VK3XYZ. I'll get Mike to say hello.
- Hello.
- VK3XYZ this is VK2XYZ. I'll get Fred to say hello.
- Hello.
- VK2XYZ this is VK3XYZ. Well thanks for the contact; we'll look around and see if there's anyone else to talk to. VK2XYZ this is VK3XYZ.

Or maybe after calling CQ for a quarter hour you get this: "— VK2XYZ this is VK2XYZ. We're just a few blocks down the street from you. Name here is Brian! That's B-R-I-A-N, Brian. Boston Radio India America Norway. Brian. Heard you calling and thought you might just give me a report on a new cubical quad I've installed. The SWR is about 1 to 1 and front to back ratio is over 40 db. I'll call you long path first. Hi. Just keep watching the old S-meter now. We're pouring out 500 watts PEP from a XX-5367D in grounded grid driven by a couple of XX-5366R in push-pull. Microphone's a cordless ceramic 10-Z. What's this jamboree you were calling? Some sort of new prefix or something? Watching the S-meter? Now I'll swing it

round then swap to the old Yagi; used to get a bit of TV with it but ... Blah Blah ...". Suggestion? Give him 20 seconds then QSY.

For what there are worth, here are some more suggestions for Jamboree Day, meant for the 10 to 11 year olds.

1. Ask the scout leader to only bring children interested in radio.
2. Remove anything that can be knocked over.
3. Put a large mat over any wires on the floor.
4. Put away anything that can be picked up and dropped.
5. Have a list of suitable comments and questions clearly written on card; have a visitor read this through before starting.
6. Have printed signs in position, e.g. "Transmitter", "Receiver", "Antenna", "Power Supply", "Main Switch" etc.
7. Have rig tuned to 20 or 40 meters before visitors arrive; never keep them waiting while you twiddle every knob in sight.
8. Have only two or three in shack at a time; ask scout leader to mind surplus in back yard. They will need shuttlecock, football, bad board or something.
9. Before a QSO briefly point out features of interest, i.e. antenna, receiver, transmitter, receiver, etc.
10. Explain prefixes — VK, ZL, W, K, JA.
11. Tune in a good signal and ask if they can understand it (SSB often takes getting used to).
12. Never bore everyone with weak signals.
13. Talk English. Absolutely banned — QRM, Marv, Handle, Hi, 73, DX, Phonetics, QRX etc.

14. Avoid all technical jargon.
15. Give call-sign every five minutes — not every break. It is most important not to turn contacts into mumbo-jumbo.
16. Use question-answer technique; never talk for five minutes, or even two minutes.
17. Advise visitors to ask questions twice, and to repeat anything important, such as names.
18. Have a few kielies and soft drinks ready outside for a good finish.
19. Offer your QSL card and a few spare DX ones as souvenirs.
20. Mention W I A services.

Lee Kinsella, VK2AXK

Awards Column with Geoff Wilson VK3AMK

In 1973 the City of Bamberg, Germany, celebrates its 1,000th anniversary. Non-European stations contacting three amateurs in the Bamberg area during the period 1.1.73 to 30.6.74 will be eligible for a special award to commemorate the event. There are no mode restrictions. Every station can be worked once on each band. To receive this award send your QSL cards for the Bamberg stations, together with a fee of DM 5, \$2. US., or 10 IRCs to the Award Manager, DLBNG, Wolff, Graf, 1086 Bamberg, Michelsberg 4, Germany.

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First consignment will be in Sydney by the time this advert appears. Following his recent trip round the world to review the availability of components, Dick Smith has made arrangements for the direct importing of ARRL publications. The American Radio Relay League is acknowledged as a leading publisher of amateur radio material. So get your orders in NOW.

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An informative guide written by amateurs who are leading the field. Covers history of FM, mobile operators, transmitters, receivers, antennas, repeaters, selecting a rig, testing, etc. A wealth of construction info and a glossary of the jargon. If you're keen on the subject you must get a copy \$4.75.

SSB FOR THE RADIO AMATEUR

This timely book is distilled from the pages of QST the ARRL monthly magazine. Indispensable for newcomers, handy for old-timers it starts with an introduction to SSB then continues through modulation, phasing, linear amps, VFOs, voice control, break in, etc. A combination of theory and practice \$4.75.

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An accumulation of many years of amateurs' experience in this most important subject. First 6 chapters cover principles of transmission lines and antennas, propagation etc. Then there's data on various amateur designs eliminating the need for tedious calculations. Finally a useful section on mechanical and geographical aspects. Value at \$4.25.

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AMATEUR BEACONS

| | | |
|-----|---------|---------------------------|
| VKO | 52.160 | VKOWI, Macquarie Island. |
| VKO | 53.100 | VKOMA, Mawson. |
| VKO | 53.200 | VKQGR, Casey. |
| VK2 | 52.460 | JZVW, Dural. |
| VK3 | 144.700 | VK3RTG, Vermont. |
| VK4 | 52.600 | VK4WV2, Townsville. |
| VK4 | 144.400 | VK4W1/1, Mt. Mowballan. |
| VK5 | 53.000 | VK5VF, Mt. Lofy. |
| VK5 | 144.800 | VK5VF, Mt. Lofy. |
| VK6 | 52.006 | VK6VF (VK6RTV), Bickley. |
| VK6 | 52.900 | VK6RTT, Carnarvon. |
| VK6 | 144.500 | VK6RTT, Albany. |
| VK6 | 145.000 | VK6VF (VK6RTV), Bickley. |
| VK7 | 144.900 | VK7RT, Devonport. |
| VK8 | 52.200 | VK8VF, Darwin. |
| ZL1 | 145.100 | ZL1VHF, Auckland. |
| ZL2 | 145.200 | ZL2VHF, Wellington. |
| ZL2 | 145.250 | ZL2VHF, Palmerston North. |
| ZL3 | 145.300 | ZL3VHF, Christchurch. |
| ZL4 | 145.400 | ZL4VHF, Dunedin. |
| JA | 52.500 | JA1IYG, Japan. |
| HL | 50.100 | HL9WI, South Korea. |
| KX6 | 50.110 | KX6HK, Marshall Islands. |

NEW W.A. DIVISION

This page takes the opportunity on behalf of the VHF fraternity in wishing the newly formed A.C.T. Division of the Wireless Institute of Australia every success in the future, the formation of which was instigated by the Canberra Radio Society, an organisation of some 22 years standing. The first meeting of the new Division was held on 23rd July, 1973, the President being John Lauten VK1JL, and Secretary, Andrew Davis VK1DA. The A.C.T. Division Federal Council is the well known VHF operator (and HF of course) Eddie Penikis VK1VP. New members and visitors will be welcome at meetings and other activities, and information may be obtained by writing to the Institute at P.O. Box 1173, Canberra City, A.C.T. 2601.

BY-LAW ENTRY OF EQUIPMENT

The Editorial by Roger VK2ZTB in the July issue of "8 UP" on the above subject makes sensible reading, and food for thought and as there is room this month in the column I think the comments should be digested by wider group of people. I therefore quote:-

The recent announcement that amateur equipment may be brought into Australia under by-law entry will be welcome news to many. It will probably stimulate activity to a certain extent, but I note from the information received that VHF equipment appears to be excluded. Now, one does not really know whether to look upon this as a blessing or a curse. If VHF equipment is included then the increase in "appliance operators" is likely to be considerable. Now this is not necessarily detrimental as it can be argued that, after all, appliance operators do populate the bands thus saving it for the experimenters/transitioners from the clutches of commercial encroachment.

But then appliance operators are notorious for being confused by more than three knobs or switches and thus will tend to buy either the simpler FM equipment or the fully automatic variety. Consequently, they will congregate on the FM nets which is not necessarily a bad thing either. Less DRM and confused operating on the other hand.

Then again, more people should be encouraged to operate tuneable, and the relatively sophisticated equipment that comes within reach of the pockets of more people allows (and indeed encourages) them to indulge in such activities as mentor scatter, tropo scatter etc. which all to the good. It also allows contact with those experimenting with UHF or sophisticated communications methods or circuits, which can only be a good thing in the long run.

In one sense, if by-law entry of VHF equipment is possible, then it could prove detrimental to the hobby by encouraging "the curse" of toy radio, but the possible advantages to be gained from the availability of more sophisticated equipment may outweigh the disadvantages thus introduced. Think about it." Unquote.

Since that editorial was prepared there has been the further decision of a general reduction of 25 per cent in tariffs which may also have a bearing on the matter. One certainty is that as SSB operation is increasing rapidly on VHF, a logical starting point for a good signal is one of the proven SSB transceivers in conjunction with a transverter.

CONFIRMATION OF RECORD.

The Australian record for 2300 MHz set up on 19th May, 1973 between VK2ZAC/2 and VK2BON/2 operating between Priest's Ridge near Kulnura to Mt. Gibraltar near Mittagong is confirmed. The distance is 159.931 Km (99.376 miles).

To be sure there are many problems to be overcome in the transverter, but a good transceiver halves the problems straight away. Anything which allows better equipment to come into the hands of those prepared to use it intelligently and updating the state of the art in many more shack, can only be good. Particularly as we do not have a large enough amateur population in Australia to adequately support industry along similar lines.

BENDIGO REPEATER

John, VK3AAA, has written with some more information on the Bendigo Channel 4 Repeater. He advises that the repeater is at present operating on low power from Flora Hill. Although Departmental approval has been obtained to relocate to Mt. Alexander (2432 feet a.s.l.) it was the original intention to delay, as a matter of convenience, both this and the increase in power until the relocation of repeater frequencies was satisfactorily resolved.

It is now felt that, as both of the other existing Ch. 4 systems in Victoria at Geelong and Gippsland have been moved to higher sites, the full extent of co-channel problems should be thoroughly investigated before any changes are made. Consequently, the Bendigo Group has resolved to bring forward the date of relocation so that the extent of the common coverage areas between all three repeaters can be fully assessed before any frequency changes are made.

GENERAL

I have been somewhat out of touch with things this month due to exams, a week suffering with the wog, and sundry other things like stocktaking, income tax etc., plus many things you would not really care to hear about. Thus news is a bit scarce, but nothing unusual for this time of the year. I note that most of the other publications I have received for the month have been very light on for general interest news. Obviously, it is for people to write to me. Anyway, we will not waste the Editor's paper, so will close at this point with the thought for the month: "A good woman is like a good book - entertaining, inspiring and instructive; sometimes a bit too wordy, but when properly bound and decorated, irresistible. I wish I could afford a library."

The Voice in the Hills.

TASMANIA DIVISION GOLDEN JUBILEE AWARD

Following is a list of applicants who have successfully claimed and been awarded Certificates.

| Cert. No. | Call | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|-----------|--------|----|--------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| | M3MRK | 18 | ZL2IK | | | | | | | | | | | | | | | |
| | VK3VJ | 19 | ZL3JH | | | | | | | | | | | | | | | |
| | VK3BQ | 20 | VK3JEW | | | | | | | | | | | | | | | |
| | ZL4CA | 21 | ZL3JN | | | | | | | | | | | | | | | |
| | ZL4JP | 22 | ZM3PW | | | | | | | | | | | | | | | |
| | V6660 | 23 | ZL2AZ | | | | | | | | | | | | | | | |
| | ZL3DA | 24 | ZM3AG | | | | | | | | | | | | | | | |
| | V555M | 25 | ZL3KO | | | | | | | | | | | | | | | |
| | ZL2AH | 26 | ZL3AG | | | | | | | | | | | | | | | |
| | ZM2ANA | 27 | VK7A | | | | | | | | | | | | | | | |
| | V-12K | 28 | W7KSA | | | | | | | | | | | | | | | |
| | ZM3ACZ | 29 | ZL3ACS | | | | | | | | | | | | | | | |
| | ZM3SX | 30 | VK3APL | | | | | | | | | | | | | | | |
| | -32Z | 31 | VK3BZ | | | | | | | | | | | | | | | |
| | VK3BZ | 32 | VK3APL | | | | | | | | | | | | | | | |
| | VK7BR | 33 | ZL3AZ | | | | | | | | | | | | | | | |
| | V66MP | | | | | | | | | | | | | | | | | |

20 Years Ago

with Ron Fisher VK3OM

September 1953

The VFO at VK3WV, by Jack Duncan, VK3VZ, headed the technical articles in the September issue of AR. As well as being technical editor of Amateur Radio, Jack was closely associated with the design and construction of the transmitting equipment at VK3WV when this station was located in Queen Street in the heart of Melbourne.

Jack's VFO was based on the then easily obtainable Command transmitter. Stability of the completed unit averaged better than 5Hz in a one minute period, which would be considered good even with today's sideband gear. If you are considering using a Command transmitter as a VFO, reference to this article would be very worth while.

Part three of "Amateur Television" by E. Cornelius, VK8EC, described a synchronising signal generator. This was an article with lots of good information, including data on trigger multi-vibrators, step counters, and other items.

VK7RK's DX notes reported the first amateur contact between Australia and Easter Island which was worked up by VK7KB who worked CE0AA 40 meter CW. Other DX at the time was just so so. VK's working on the DX over this period included VK2AOU, VK2AMB, VK4KX, and VK9YD.

Commercial interference in the 7MHz band is certainly not a new problem. Federal Notes report that representations have been made to Mr R. G. Casey, Minister for External Affairs, and the Post Master General, Mr H. L. Anthony, regarding transmissions from Radio Pakistan. Both these gentlemen promised to take action on the matter.

W.R.C.S.

with Bob Guthrie

Methodist Manse, Kadina, S.A., 5554

NEW VKS SUPERVISOR

We welcome Mr N. H. Hyde of the Hamilton Senior High School, who has taken over from Laurie Jupp to whom we express our thanks for services rendered in the West. Ironically, it would seem that communication is a major problem in W.R.C.S. Key Watson in writing for the problem with the New-sheet clubs. The new supervisor in W.A. wrote to a supervisor in another state and after several months came to the conclusion that the said person was either deceived or suffering from rigor mortis. S.A. supervisor, Allen Dunn, commenced a recent letter as follows: "Just so that it cannot be said that the S.A. Supervisor is slow in keeping the Federal Co-ordinator informed, here is the latest on the W.R.C.S. situation in VKS." Welcome to Noel Kohler, the new S.A. State Secretary. June annual meeting of the S.A. are discussed the proposed new syllabus and favoured provision being made up to ACP level.

Congratulations to the Maitland Radio Club in having been awarded, for the fourth time, the pennant from the Institute of Radio and Electronics Engineers of Australia. This club is busy promoting a new building scheme which, when completed, should prove an outstanding contribution to the advancement of W.R.C.S. in that state. It is noted that Maitland has the backing of civic and district organizations, an area which other clubs could consider. The W.R.C.S. has nothing to hide and must to publicize! We congratulate the Marist Bros. High School Radio Club in being the parent of non-school radio clubs, and its leader, Bro. Cyril, who received his ACPF through instruction in the Maitland Club.

The Federal level will have requested State Supervisors to form the Council, for permission to have the constitution amended as follows: Article (5) sub section (f) "To exercise such authority as may be necessary for the development of, and in the interest of, W.R.C.S. This added clause enables radio club clubs, and coordinators to make such decisions as may be required between triennial meetings.

We hope that the Syllabus Committee will be able to furnish a complete and adequate decision on our teaching notes when the Novice Licence details are available. In the meantime, we have the task of promoting the scheme with publicity and achievement. As communication is one of our major tasks, all supervisors please keep me informed of any major movements in their respective states.

Contests

with Peter Brown VK4PJ

Federal Contests Manager, G.P.O. Box, 638
Brisbane, Qld., 4001.

CONTEST CALENDAR.

September 1 - 2: Gold Coast Amateur Radio Club Field Day.
September 8 - 9: Worked All Europe DX 'phone Contest.
September 15 - 16: The 15th Scandinavian Activity Contest, CW.
September 22 - 23: The 15th Scandinavian Activity Contest, 'phone.
October 6 - 7: VK-ZL Oceania, 'phone. Do your bit with VK mike.
October 13 - 14: VK-ZL Oceania. C.W. More VK CW operators needed.
October 13 - 14: RSGB 21-28 MHz, 'phone.
October 20 - 21: RSGB 7 MHz CW.
October 27 - 28: CQ-WW-DX 'phone.
November 3 - 4: RSGB 7 MHz 'phone.
November 11: Czechoslovakian contest.
November 13 - 25: CQ-WW-DX CW contest.
December 8 to January 20: Ross Hill Memorial VHF-UHF Contest. Rules in next month's **Amateur Radio**.
February 9 and 10: John Moyle Memorial National Field Day.
February 24: Central Coast Amateur Radio Club Field Day, VK2.

When is your Club or Division holding a contest?

WHAT AGAIN???

Yes, again I mention the VK-ZL Oceania, on October 6 - 7 and 13 - 14, and the importance of "Flying Australia's flag" in the international field. Put in a good attempt for your country and build up your state's representation. There is every chance that you could work DXCC on that weekend. Get on the air and the bands will not be "dead". You will note that the RSGB 21-28 MHz November contest is on one of the weekends so you may be able to squeeze a few CW contacts out of those bands.
Also in October and November are the popular CQ-WW-DX 'phone and CW contests. Keep the dates clear for a few hours at least.

Unofficial CW Contest.

Thanks to the operators who wrote to me of the above contest, and told me that few knew what the contest is about, and that all seem to be experienced operators. The best log for this was VK3QK - 17 contacts.
June VK3XB - 27 contacts.
July

I suggest that if we do not try we certainly shall not succeed in developing CW. VK3 lead easily . . . no VKs or 5s?
Frank VK4BH has yet to get his tower up at a new OTH or he would be on. Let us carry on to November and see if the CW contest is worthwhile.
Here are the simple rules:
This Sunday, 15 Sept., 20 Oct., 17 Nov., 0800-1400GMT. 16 pm - 12 pm (EAST) Bands 80, 40, 20, CW only. VKs only. One point per contact, one contact per station per band. No logs. Your Call sign and score only. No shepherds either. You will note that there are CW contests on Sept. and Oct. dates.

1972 CQ-WW-DX Contest results, Australia. Band Points Contacts Zones Countries

| | | | | |
|---------------|--------|------|----|-----|
| VK2JL 14MHz | 29580 | 128 | 26 | 59 |
| VK3JF A11 | 11608 | 168 | 47 | 89 |
| VK3SM 21 MHz | 15650 | 124 | 20 | 25 |
| VK3ARY 14 MHz | 35208 | 183 | 25 | 47 |
| VK4FH A11 | 129168 | 402 | 43 | 65 |
| VK4AK A11 | 48618 | 122 | 53 | 90 |
| VK4PJ 28 MHz | 5088 | 56 | 12 | 20 |
| VK4DO 14 MHz | 34224 | 136 | 32 | 61 |
| VK5MF A11 | 46325 | 186 | 30 | 49 |
| VK5NE A11 | 5412 | 83 | 10 | 12 |
| VK6HD 14 MHz | 706251 | 1483 | 37 | 132 |

Congratulations VK6HD on a fine effort.

EX-G. CONTEST. The week-end of 10th-11th November (first week-end after 5th Nov.) from 6.00 on Saturday to 2.52 on Sunday any mode and licensed frequency. Objects of the contest are to publicise reciprocal operating privileges Worldwide and to promote links between the Ex-G Club. Overseas British residents and amateurs in the U.K. Only 24 hours total operating time may be counted in the contest period.
Ask your G contacts or a member of the Ex-G Club for further details if you are interested in this contest.

Magazine Index

With Syd Clark, VK3ASC

BREAK-IN, January-February 1973.

Special "Amateur Radio Regulation Issue". Commemorating 50 years of Amateur history in the "shaky isles". Very interesting.

March 1973.

Hamburg-Westport by the Rolly Route; Mainline ST-5 Demodulator for RTTY; Frequency Shift Keying; Operational Amplifiers; Calibration of a Frequency Meter.

April 1973.

The Story of Time: C. W. Impending Demise? How to Resonate a Half Wave Antenna; The Morse Code and its problems; NZ.A.R.T. Annual Report.

CQ.TV, February 1973.

Circuit Notebook No. 12: European Amateur TV Reporting System: Ideas for Amateur Colour. Part 5: 1972 AT Contest Results; Receiving Amateur TV for the Beginner; Slow Scan News; A Flying Spot SSV Scanner; Integrated Circuits, Part 11.

HAM RADIO, March 1973.

Solid State 80 Meter SSB Transceiver; All Mode Companion Receiver; Phase Locked Loop AFSK Generator; Radio Frequency Interference: How to use Ferrite Beads; Simple Integrated Circuit Electronic Keys; Crystal Test Oscillator and Signal Generator; Solid State Mobile Touch-Tone Circuit; HW-16 Modifications for VFO Operation.

HAM RADIO, April 1973.

Solid-State Two-Metre FM RF Power Amplifiers; The Vertical Radiator; Phasing Type SSB Generator; RF Phase Meter; Sensitive RF Indicator; Simple Regenerative VHF Receiver; First Wireless in Alaska; How to make your own Printed Circuit Boards; Speed Standards for International Morse Code.

MOBILE NEWS, March 1973.

Choosing a Location for Portable Operation; Suppression and the Ford Cortina.

April 1973.

Choosing a Location for Portable Operation; Variable Frequency Oscillator for the FT-75; Comment: General Mobile Chatter and some technical information.

QST, April 1973.

A Solid-State SSB Generator with Digital Readout; A Band-Edge Marker Generator; Field Day Filters (For keeping strong signals out of adjacent receivers); Cobination High-Stability Two-Tone Generator and Calibrator; Calculating Vertical Pattern of Repeater Antennas; Fundamentals of Solid-State Power-Amplifier Design; Part 3: Another Look at Reflections; Part 1: The Dual Six - A QRP Transmitter for 40 and 80 metres; Reviews of: Hal Communications RVD-1002, RTTY Video Display Unit and RBK-1 VTY Keyboard, The Hal ST-6 RTTY Demodulator, Dipset-60 Frequency Counter and Dipset-160 Converter.

May 1973.

A Medium Power H.F. SSB CW Transmitter; An Antenna Changeover System and Power-Output Indicator; Precise Frequency Measurement with Amateur Equipment; A Pair of Handy Testers; A Practical 40 metre Quad; Transceiver Operation for the Heath HX-10; Heat Losses in Power Transformers (Recommended); Range Measurements with Oscar 6; Reviews of Clegg FM-27B FM Transceiver, Kenwood (Triol) TS515 Transceiver.

RADIO COMMUNICATION, April 1973.

Audio Frequency Interference (AFI) (Suppressing troublesome Hi-Fi interference); An Inexpensive VHF Aerial; Review of FTDX-401 Transceiver; Break-In and Listening Through; A Note on Kites; Technical Topics, Microwaves.

May 1973.

A Mast System for Dish Aerials; A Shack-Earthed Folded Vertical for 14 MHz; A Modern Approach to Radio Teletext; The "Yet another" Keyer; All Band Portable Aerial.

BADIO COMMUNICATION, June 1973.

The G3XGP Frequency Meter; Quasi Aerials at VHF; Progress Report on the GB3 PL Repeater Experiment; The Solar Events of 5 August 1972; Plus all the usual features.

SHORTWAVE MAGAZINE, March 1973.

Adaptable 30-watt Transmitter; Two Aerials Ideas; Aerial Current Meter; Sideband Transverter for Two Metres.

SHORT WAVE MAGAZINE, April 1973.

Side-band Transmitters for Two Metres; Front-End Thunting; Inexpensive Dummy Load; F.S. Meter for 23 Centimetres; Looking at the K.W. Atlanta; Crystal Mic. Amplifier.

73 MAGAZINE, February 1973.

A TTL Logic CW ID Generator; The Evolution of Spectrum Management; Phase Locked Loop Decoder; Toroidal Quadrature Antenna; Applications for An Active Filter; Time-Frequency Measuring System Part 2; Repeater Keying Line Control; Popular Slow Scan Television Circuits, Part 1; A 2 Metre Converter for an AM FM Broadcast Receiver; All Purpose Metering Circuit; Are FET's Really Biased? Frequency Counter Input Circuit; TR-22 Modification (Higher Power Output); Transistor RF Power Amplifiers, Part 1; Light Bulbs as RF Power Indicators; Economy Filters for the Collins 75-A4; CNBF's; Adapting Electronic Keys to Older Transmitters; Gonset Linear Modification; A Time for Everything.

73 MAGAZINE, March 1973.

A Fast Scan Facsimile System with SSVT Compatibility; The Easy Way to Six and Two Metre High Power; Solid State Repeater Control; A Digital Data Distributor for RTTY; The Ample Amplifier; Popular SSVT Circuits, Part 2; The Can Scanner; Improving the Indoor Antenna System; Updating Sorenson "A" Nobotrons; FM Deviation Meters; Time-Frequency Measuring System, Part 3; Another use for 400 cycle Transformers; Bandpass Filter Design.

73 MAGAZINE, April 1973.

If You Don't Have a Mountain; Low Cost FM Deviation Meter; Taming Those Hot 500 MHz FET's for 2M FM; Two More Two Metre Amplifiers; "Mini" Repeater Control System, Part 1; Getting Your Repeater Licensed; Low Temperature Techniques for Radio Amateurs; Choosing Your FM Rig; Europe on 2 Metres a Day; Scanning Adapter for FM Transceivers; The RCA CMU15 FM Transceiver; 2 Metre FM at 14,000 Feet; Simple Lightning Detector; Citizens Band Alignment Aid; Heath Desk Top Calculator; Transistor RF Power Amplifiers, Part 2; Repeater Economic. International Signals' 100 Milliwatt Rig Revised.

SHORT WAVE MAGAZINE, May 1973.

Knowing about SSVT; Antenna Noise Bridge; Absorption and Indicating Wave meters.

CQ - June 1973.

Tuning in On Touch-Tone Pads; OmniGain Antenna on 2 Metre F.M.; SSVT Flying Spot Scanners; Understanding Ten Metre Propagation; Converting the Western Union Telefax Machine For Use in the Amateur Service.



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Ionospheric Predictions

with Bruce Bathols, VK3ASE

September 1973

This month's predictions from information supplied by the Ionospheric Prediction Service Division indicate point to point band openings for at least 50% of the month. Times are G.M.T.

28 MHz

| | |
|-------------|---------------------|
| VK2 to VK8 | 2200-0100 |
| " " " " " " | 2400 |
| " " " " " " | 2200-2400 |
| " " " " " " | 2400-0500 |
| " " " " " " | 2500-0100 |
| " " " " " " | 2200-0100 |
| " " " " " " | 0100-0700 2200-2300 |
| " " " " " " | 2200-0100 |
| " " " " " " | 0100-0500 |
| " " " " " " | 0200-0800 |
| " " " " " " | 2300-0200 |
| " " " " " " | 0200-0200 |
| " " " " " " | 2200-0600 |
| " " " " " " | 0500-0900 |
| " " " " " " | 0700-0800 |

21 MHz

| | |
|---------|----------------|
| VK3 SU | 0400-0900 |
| " " " " | 0500-0800 |
| " " " " | S.P. 0800-0900 |
| " " " " | 0400-0900 |
| " " " " | 2100-0400 |
| " " " " | 0400-0900 |
| " " " " | 0400-1400 |
| " " " " | S.P. 1000 |
| " " " " | L.P. 2100 |
| " " " " | 0400-1000 |
| " " " " | 0200-0400 |
| " " " " | 0400-1100 |
| " " " " | SU 0900-1100 |
| " " " " | SU 0700-1000 |
| " " " " | S.P. 0400-1000 |
| " " " " | 0400-1000 |
| " " " " | 2300-0400 |

14 MHz

| | |
|---------|------------------------------|
| VK2 SU | 1100-1700 2100-2400 |
| " " " " | 0400-1200 |
| " " " " | 0700-1700 2100 |
| " " " " | S.P. 0700-1100 2000-2400 |
| " " " " | 0900-1700 |
| " " " " | 0200-0800 1500, 1900 |
| " " " " | VK3 ZL |
| " " " " | 1100-1400 2200-2400 |
| " " " " | SU 0400-1000 1900-2000 |
| " " " " | ZS 0400-1200 |
| " " " " | S.P. 0900-1700 2100-2200 |
| " " " " | L.P. 0700-1000 2000-2300 |
| " " " " | VK0 G |
| " " " " | S.P. 0300, 1200-1800 |
| " " " " | VE3 L.P. 2200-0100 |
| " " " " | VE3 1800-1700 |
| " " " " | W1 0300-0400 1200-1500 |
| " " " " | VK9 2000-1700 |
| " " " " | PY 0700-1600 |
| " " " " | W6 0300-0800 1500-1800 |
| " " " " | JA S.P. 0800-1700 2100-2400 |
| " " " " | JA S.P. 0300-1100 1900-2400 |
| " " " " | VG1 L.P. 0300-1100 1900-2400 |
| " " " " | VK4 SU |
| " " " " | 1100-1700 2100-2400 |
| " " " " | ZS 0400-1400 |
| " " " " | G S.P. 0600-1800 2100 |
| " " " " | L.P. 0700-1100 2000-2400 |
| " " " " | W6 0300-1000 1500, 1900 |
| " " " " | VK5 SU |
| " " " " | 1100-1800 2200-2400 |
| " " " " | ZS 0400-1200 |
| " " " " | S.P. 0900-1700 2200 |
| " " " " | G L.P. 0700-1100 2100-2300 |
| " " " " | JA 0800-1700 |
| " " " " | JA 1500-1600 |
| " " " " | PY 2100-1200 2200-2400 |
| " " " " | VK6 SU |
| " " " " | 1200-1900 |
| " " " " | SU 1000-1400 |
| " " " " | S.P. 1000-1900 |
| " " " " | L.P. 0800-1200 2200-2300 |
| " " " " | W6 0500-1800 |
| " " " " | W. 0500-0800 1500-1700 |
| " " " " | PY 2300-1300 |

7 MHz

| | |
|---------|------------------|
| VK2 SU | *500-2100 |
| " " " " | ZS 500-2100 |
| " " " " | S.P. 500-2100 |
| " " " " | G L.P. 0700 |
| " " " " | JA 1400-2100 |
| " " " " | JA 0700-1800 |
| " " " " | VK6 SU |
| " " " " | 1500-2300 |
| " " " " | ZS 1500-2300 |
| " " " " | G S.P. 1000-1900 |
| " " " " | JA 1400-2300 |
| " " " " | W6 0900-1500 |

Smoothed monthly sunset numbers predictions, September 34, October 23, November 30, December 28.
Swiss Federal Observatory, Zurich.

Hamads

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- * \$6 per 3 cms. for other amateurs and S.W.L's.
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Electronic Organ, Selmer Minister Oxford. Out of order. Suitable re-building. Appearance as new. Over 100 valves mainly 12AX7. Amplifier pair EL34's. 12 inch speaker. Complete with manual. VK2UJ QTHR.

Collins Receivers. Unique opportunity to obtain the "best" 7551 as new \$375. 7553A amateur & general cov. \$550. 7553B late model \$550. 7553C very late model \$600. Contact Bill Watson, 7 Lambert Grove, East St.Kilda, Vic. Phone 52 1059.

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General Coverage RX. Realistic DX-150A. Six months old. Eit circuit, excellent selectivity. \$209.00 net. P.O. Box 30, Mildura, or Ph. (050) 24-5483 evenings.

Geloso NA7ITE. P1-Coupler, tuning and loading coils. As new. \$116 posted. VK4CY QTHR.

W-gain 3 element beams 10m \$35, 15m \$40, both with BN-86 baluns; as new condition, never erected in coastal area. an McCosker, 34 The Promenade, Isle of Capri, Surfers Paradise.

STC MTR 25/131 Multi-channel Mobile c/w Chan B x10, microphone, leads and instruction manual. Top performance and condition \$120 or offer. VK4AO QTHR.

CW TX AT20 150W complete working order 80/40/20 MO/CO, inductor, buffer stages all 807a final single 35, PSU 9666, cooling fans. Full protection O/Load protector, interlock, gate switches. Instruction manual. One ham modification for remote control. VK3VG Ph. (03) 850-1894, 7 p.m.

—FM Transceiver, STC MTR-121, transmitter—PS, 6 or 10 watts complete with mobile carrier and xts for 4 channels. 6m—AM Mobile Transceiver, Fly Reporter Mk III, with xits for 53.932 MHz net. VK3ZS Ph. (03) 848-6151 A.H.

QEOE 3/20 1 used, 2 new \$15; QEOE 2/5 2 new \$10; QEOE 3/12 3 new \$10; FM 2 Mix Fly Premier Carphone, solid state, final includes boards for 50W plus xits for ABC, 1 new 4 R OK but TX needs attention \$85; VK3EW QTHR.

Moving Interstate, cleaning shack. Selling 5MHz American CRO, 6 2 meter folded groundplanes on boom, capacitors, valves, transformers, aluminium tubing, lots of other goodies.

3K3AQV, QTHR, (03) 874-5942.

Audiotape, cokes, valves, no charge. Power supply, \$10. Transceiver Type 3 \$29. No. 62 \$13. Ph. (03) 347-7491, VK3NI QTHR.

Heath HR10 Amateur RX 80 to 10. 'S' meter, NL B.F.O. Complete with manual and transformer, \$120. Johnson Matchbox aerial impedance matching unit with instructions, \$85. Astatic D104 microphone as new, \$15. VK3QS QTHR.

Galaxy V MKII Transceiver with power supply. VK3KR QTHR. Ph. (03) 44-4114 A.H.

Swan 500 transceiver c/w heavy duty power supply, service manual, and spare set finals, still in immac. cond. \$350. GNO. VK2BTL QTHR Ph. 20229 ext. 253.

Biggie Frequency Counter, 5 digit, 7 segment display. 0.1 kHz—220MHz & digit readout capability. As new \$250. VK3ZS, 5 Tucker Court, Traralgon, Ph. (051) 74 114, A.H.

Yaesu FL 200B TX. Good order, \$200; AWA Car Phone Junior Channel A, \$25; VK3AR, Wartook Wayside, Horsham, 3400.

Drake 2A Rx, xit, cat, Q mult, NL match, sp, 6 HF bands \$200. Yoda, FL106B TX 120W PEP, call only \$165; Lafayette TK340 0.5-30 MHz, 4b, cat 6b, Omnit \$85. QTHR Ph. (03) 57 8600.

Viceroy MK1 and Drake 2B complete SSB station call 5 bands. Excellent condition with handbooks etc. \$320. Allen Crowthay VK3SM. QTHR Ph. (03) 36 4406 or 9-4 (03) 62 9510.

MR10A 2M FM Carphone, Channels A & 4; Nuvistor front and good condition. A & D supplies \$35. VK3UG (03) 231-2028, QTHR.

Pyre Overland SS 25w 2 Mx FM Ch A, B, T, \$165. Kyritsu VTMV 445; Vinten MTR Ch A, B, C, D, 1, 2, 1120, all above QEO; Super hit PWR G1 (100w) driving lamps Hells 560; Magna cartridges AC 25 as new \$75; CRO WBD 905-15 kHz bandwidth with probes etc. \$350; Vinten MTR 16 G.A.M. \$70.

VK3AV QTHR Ph. (03) 581 6836 A.H.

Silent Keys

BOB GLOVER VK6RG.

To most people June the 6th, has no particular significance. However it was on June 6th, that Bob Glover VK6RG celebrated his 73rd birthday.

A little more than two weeks later he had passed away. Bob had lived alone for many years and it could be truthfully said that amateur radio was his life. It would be a most unusual day if Bob was not on the air on either 20 metres or 80 metres. These were the only bands his home brew transmitter would cover and he extracted the maximum from them.

Although not a "D.X. hound", never-the-less he had worked more than his share of the exotic calls. However he was just as happy ragchewing on 80, and what more pleasant way to spend an evening?

Bob started in ham radio as a Z - call, but after gaining his full call, the lure of the H.F. bands claimed his full attention.

It is hard to recall many operators who came up on the bands so consistently, day after day, year after year, as did Bob Glover.

Amateur radio will be much the poorer with his passing, 73 old timer.

Ross Greenaway, VK6DA.

K. A. THOMAS VK6TA

We are sorry to report the passing of K. A. (Ken) Thomas (VK6TA). Ken had not been too active in recent times, but on his recent transfer to Perth from Geelong had been busy packing up the reins again. His early passing is much regretted by his many friends.

Ron Vaughan, VK6RV.

Enthusiast requires early Radio Sets, valves, parts, speakers and books prior to 1930. Good prices paid. Details to Edgar Road, San Remo, 3925. Phone 107. M. O'Brien, Experimental VK30.

WANTED

Collins 628-1 must be clean and in good condition. Price, etc. to VK3ZS, 5 Tucker Court, Traralgon, 3944. 2M FM RX 240V at a reasonable price. Also 15/6 412/319 IF for Philips radioplayer, mod 3041 or any other parts for above model. B. Boyce, 146 Abbott St., Sandringham, 3181.

C.R.O. Servotronics 532 or similar 3" Scope with DC to 5MHz amp, high sensitivity and slow sweep. VK2AS1 QTHR.

Rebecca Indicators and Receivers, likewise Eureka and Racoon gear, or any pulsed Radar or Loran equipment and handbooks, A.P.5.4 scanner or cutter feed section for same. RAAF type 102RX 1023 TX, M2023 radio compass controller. VK3ACB Ph. (03) 337 4902, A.H.

Collins Receiver 51J, 512J, 513J or 514J in clean condition with table cabinet. Pay reasonable market value. VK3JB, QTHR.

RSGB Amateur Radio Circuit book, one copy required. VK3QLP or P.O. Box 20, Castlemaine, 3450.

Collins 30K1 Linear. Particulars to VK2AS, 7A Melbourne Road, East Lindfield, 2070. Ph. (02) 487 1784.

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panel meters new & used, test equip-
ment, multimeters, signal generators,
oscilloscopes, power supplies, stan-
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acitors oil filled & electrolytic, high &
low wattage resistors, transistor cir-
cuit boards, crystals.

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1.6MHz - 10MHz in 2 continuous
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tested and complete with all cables
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In 12 bands each of 1MHz.

C42 36MHz - 60MHz FM \$65

B47 38MHz - 56MHz FM \$45

C11 TRANSMITTER 2MHz - 4MHz
4MHz - 8MHz, 8MHz - 16MHz. Con-
tinuous coverage with built-in Cali-
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P1/24. Brand new 1/8" outside dia-
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ALL NEW 6-Element SUPER THUNDERBIRD DX



New "Hy-Q" Traps

Up to 9.5db Forward Gain

25db Front-to-Back Ratio

SWR Less Than 1.5:1 on all Bands

Takes Maximum Legal Power



The New Super Thunderbird TH6DXX offers the ultimate in tribander performance and mechanical reliability for 10, 15 and 20 meters...is superb on DX and other long haul contacts. Separate Hy-Q traps, featuring large diameter coils that develop an exceptionally favorable L/C ratio and very high Q, provide peak performance on each band whether working phone or CW. Exclusive Hy-Gain Beta Match, factory pre-tuned, insures maximum gain and F/B ratio without compromise. Feeds with 52 ohm coaxial cable...SWR less than 1.5:1 on all bands. Mechanically superior construction features taper swaged, slotted tubing—allows easy adjustment and readjustment. Taper swaged tubing permits larger diameter where it counts! And, less wind loading. Full circumference compression clamps are mechanically and electrically superior to self-tapping sheet metal screws. Large diameter, heavy gauge aluminum boom...heavy cast aluminum boom to mast clamp and heavy gauge machine formed element to boom brackets. A totally new dimension in Tri-Bander performance.



Tilt-head, universal boom-to-mast bracket
—all new, cast aluminum bracket accommodates masts from 1 1/4" x 2 1/2". Allows easy fitting for installation, maintenance and tuning, provides mast feed thru for beam stacking.



Taper swaged, slotted tubing—new tubing on all elements allows easy adjustment and re-adjustment. Taper swaged to permit larger diameter tubing where it counts! And, less wind loading. Full circumference compression clamps are mech. and elec. superior to self-tapping sheet metal screws.



Extra heavy gauge, machine formed element-to-boom brackets, with plastic sleeves used only for insulation. Bracket design allows full mechanical support.

ELECTRICAL SPECIFICATIONS

| | |
|---------------------------|----------------------|
| Frequency Range | 20, 15 and 10 Meters |
| Gain | 8.7db (average) |
| Front-to-Back Ratio | 25db |
| Maximum Power Input | 1 kw AM; 2 kw P.E.P. |
| VSWR (at resonance) | 1.5:1 |
| Impedance | 50 ohms |

MECHANICAL SPECIFICATIONS

| | |
|-----------------------------|------------------|
| Longest Element | 31.1 ft. |
| Boom Length | 24 ft. |
| Turning Radius | 20 |
| Wind Load at 80 MPH | 156 lbs. |
| Maximum Wind Survival | 100 MPH |
| Net Weight | 61.5 lbs. |
| Mast Diameter | 1 1/4" to 2 1/2" |
| Boom Diameter | 2" |
| Surface Area | 6.1 sq. ft. |



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